STATE OF MAINE
DEPARTMENT OF CONSERVATION
STATE HOUSE STATION 22
AUGUSTA, MAINE 04333

JOSEPH E. BRENNAN
GOVERNOR

RICHARD B. ANDERSON
COMMISSIONER

NOV 2

November 18, 1986

Melvyn J. Weiss, Field Representative
Forest Pest Management
USDA Forest Service, S & PF
Northeastern Forest Experiment Station
Box 640
Durham, New Hampshire 03824

Dear Mel:

A summary of the forest insect and disease conditions for Maine for the 1986 season is attached. While the incidence level of a number of problems rose during the past season, the intensity of individual pests declined for the most part. Of special note; however, was the rise in numbers and severity of stress related problems such as bark beetles on a variety of conifers and shoestring root rot. This comes at a time when concerns over the impact of acid rain are being voiced and management methods for stands formerly ravaged by the spruce budworm are being explored. These factors will certainly play an important role in determining our course in the future.

Insect conditions generally continued along trends begun in 1985 with further decline in spruce budworm populations and low levels of hardwood defoliation in 1986. The only insect pest which consistently drew attention seemed to be the oystershell scale on beech. There were hot spots of defoliation and damage by others such as the spruce budworm, gypsy moth, birch casebearer, birch leaf miner, arbovitae leaf miner, white pine weevil and pine spittlebug but this was to be expected.

The highlight of Forest Disease Survey activities was the confirmation of the presence of the pinewood nematode in Maine. Continuing pathological problems of significance include white pine blister rust, European larch canker and related quarantine activities, scleroderris canker, annosus root rot, regeneration problems associated with Armillaria root rot, hardwood and softwood rusts, Botrytis blight of greenhouse grown containerized seedlings, needle cast disease, hardwood cankers and decays, dwarf mistletoe on spruce along the coast and off-shore islands, and larch decline.

The most noteable abiotic occurrence was on June 3, when a hail storm over a broad area in Naples and Raymond produced hail stones up to the size of a baseball. Leaves were stripped from hardwoods and white pine branches over one inch in diameter were broken off.

An increased effort with plantation problems and impact studies kept us with a very busy state of activities in 1986. We are including summaries only for those problems which seem to be of a continuing nature or of national or statewide significance. Should you have further questions or wish more detail on the 1986 material, please feel free to contact me at any time.

I hope you find this material helpful in compiling your regional survey.

Sincerely,

Thomas Rumpf
State Entomologist

TR/jlc

cc: Dearborn
Stratton

STATE OF MAINE
DEPARTMENT OF CONSERVATION
STATE HOUSE STATION 22
AUGUSTA, MAINE 04333

JOSEPH E. BRENNAN
GOVERNOR

Entomology Laboratory
50 Hospital Street
Augusta, Maine 04330
Tel. 289-2431

RICHARD B. ANDERSON
COMMISSIONER

NOV 10 RECD

November 5, 1986

Mel Weiss, Field Representative
Forest Pest Management
U.S.F.S. NA, S & PF
PO Box 640
Concord-Mast Roads
Durham, NH 03824

Dear Mr. Weiss:

This is to notify you that the pinewood nematode, Bursaphelenchus xylophilus, has been identified from the towns of Baldwin and Whitefield (see map). In both cases, they were extracted from white pine.

Confirmation was by Shari Halik, Research Technician for Dr. Dale Bergdahl, University of Vermont in Burlington.

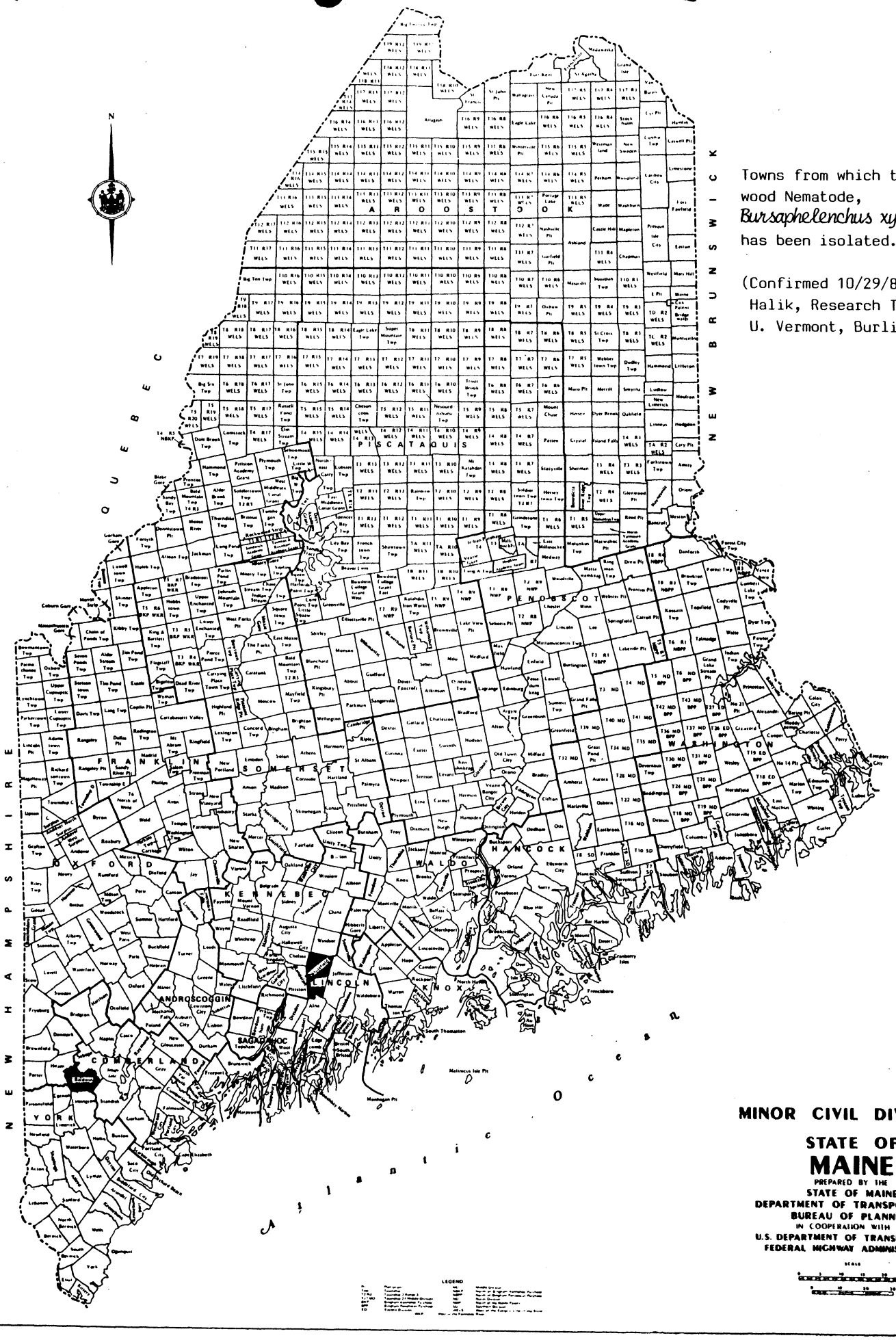
This may affect shipment of conifer chips overseas, particularly to the Scandanavian Countries.

Should you have any questions concerning this forest pest, we would be glad to try to answer them.

Sincerely,

Douglas A. Stark
Staff Pathologist

DAS:bab
Enclosure



Towns from which the Pine-wood Nematode, *Bursaphelenchus xylophilus*, has been isolated.

(Confirmed 10/29/86 by Shari Halik, Research Technician, U. Vermont, Burlington, VT)

MINOR CIVIL DIVISIONS

STATE OF

MAINE

PREPARED BY THE
STATE OF MAINE
DEPARTMENT OF TRANSPORTATION
BUREAU OF PLANNING
IN COOPERATION WITH THE
U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

SCALE

MAINE
1986 PEST CONDITIONS REPORT WORK SHEET

PEST (COMMON NAME): Gypsy Moth

(SPECIFIC NAME): *Lymantria dispar*

HOST: Oak, poplar, gray birch

PRESENT CONDITION:

AREA (TOTAL ACRES): 13,697 acres of noticeable defoliation (11,572 ac.>30% defoliation)
LOCATION: Trace-light defoliation in Kennebec Co.; up to 100% defoliation in Central Penobscot and Northern Hancock and Washington Counties

SEVERITY (INCLUDE ACRES OF MODERATE AND HEAVY DEFOLIATION OR INFECTION; DEFINE CLASSES): 2,125 ac.<30% defoliation; 5,146 ac. 30-60% defoliation; 6,426 ac.>60% defoliation

LOSSES (INCLUDE AREAS OF TREE MORTALITY; ALSO VOLUME AND/OR $ ESTIMATED): Presently evaluating crown condition and mortality after various levels of cumulative heavy defoliation from 1978-83 (preliminary data below). Increment cores from representative oaks have been collected and are being processed.

TREND:

PAST TO PRESENT: Defoliating populations restricted to northern sections of the infestation. New areas of defoliation are apparent in northern Hancock and Washington Counties, but most defoliation was in or near stands defoliated in 1985.

FUTURE: Potential expansion of the current infestation into poplar stands in Penobscot, Hancock and Washington Counties. Populations in southern Maine may resurge within a few years.

CONTROL PROJECTS (METHOD, MATERIAL, ACRES, COST, RESULTS): None conducted.

COMMENTS:

Preliminary Oak Mortality Data
(% of Oak Basal Area Dead)

	# Years of Heavy Defoliation				
	0	1	2	3	4
1984	0.5	2.6	13.8	13.5	14.8
1985	0.9*	2.6	15.1	14.0	17.0
1986	0.9	3.7	16.2	16.0	17.0

* Incorrectly reported as 1.8% in 1985 (data entry error)

MAINE
1986 PEST CONDITIONS REPORT WORK SHEET

PEST (COMMON NAME): Balsam Twig Aphid

(SPECIFIC NAME): *Mindarus abietinus* Koch.

HOST: Balsam Fir

PRESENT CONDITION:

AREA (TOTAL ACRES): 500 + acres

LOCATION: Statewide

SEVERITY (INCLUDE ACRES OF MODERATE AND HEAVY DEFOLIATION OR INFECTION; DEFINE CLASSES): Several plantation 10+ ac. with severe damage requiring control.

LOSSES (INCLUDE AREAS OF TREE MORTALITY; ALSO VOLUME AND/OR $ ESTIMATED): Dollar losses are impossible to assess as much of the loss is in the form of reduced quality or delayed harvest

TREND:

PAST TO PRESENT: Overall increase in infested plantations

FUTURE: Heavy next year dropping in severe areas of 1986. Pest is cyclic within individual lots.

CONTROL PROJECTS (METHOD, MATERIAL, ACRES, COST, RESULTS): One plantation used in efficacy tests for control with Asana® (Shell). Many individuals conducted control programs amounting (probably) to acreage > 500 ac.

COMMENTS: A cyclic pest of balsam fir which is currently increasing and has caused significant damage in many plantations over the State.

MAINE
1986 PEST CONDITIONS REPORT WORK SHEET

PEST (COMMON NAME): Larch Decline/Bark Beetle

(SPECIFIC NAME): *Dendroctonus simplex* and unknown predisposing factor(s)

HOST: Larch

PRESENT CONDITION:

AREA (TOTAL ACRES): Areas of unexplained mortality scattered throughout the State

LOCATION: Scattered statewide - more common in southern 1/2 of the state

SEVERITY (INCLUDE ACRES OF MODERATE AND HEAVY DEFOLIATION OR INFECTION; DEFINE CLASSES): Varies between areas from 10-20% to 90-100% of the larch basal area dead within individual stands

LOSSES (INCLUDE AREAS OF TREE MORTALITY; ALSO VOLUME AND/OR $ ESTIMATED): No values ascertained statewide. Changes in tree condition on monitored plots shown in attached table.

TREND: Based on point samples from 29 coastal larch stands previously identified for European Larch Canker survey work, more than half the stands had some level of larch mortality; 10% of the stands had more than 1/4 of the larch ba killed. The overall larch mortality averaged 7 sq.ft./acre (8.9% of the larch ba)

PAST TO PRESENT: Increasing in monitored plots

FUTURE: Continued accrual of mortality. Syndrome is spotty and localized but appears to heaviest in southern and western Maine. Most of the increase is in or adjacent to currently infested areas.

CONTROL PROJECTS (METHOD, MATERIAL, ACRES, COST, RESULTS):

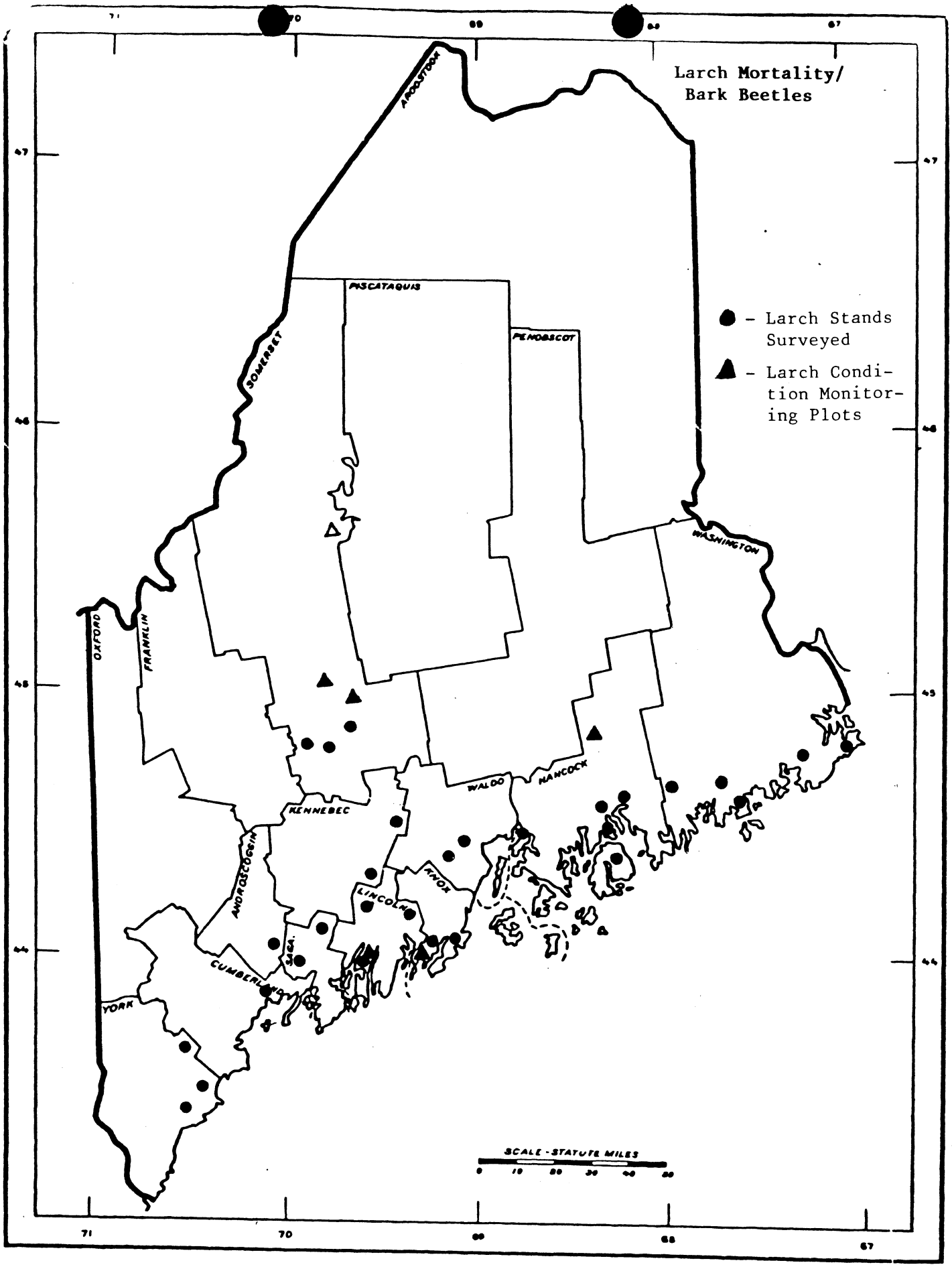
COMMENTS: While the results from the survey of the coastal larch stands do not indicate a serious overall loss yet, the situation and trends in the monitored plots do indicate potential worsening - at least in those areas with current mortality and attendent beetle populations.

Larch Beetle Condition Monitoring Plots
Average Condition by Year

	1984	1985	1986 Spring	1986 Fall
% Larch Dead	10.8	14.7	23.2	28.6
% Larch w/Bark Beetle Exit Holes	15.2	24.0	29.6	36.9
% Larch w/Pitching	17.2	70.7	71.2	67.8
Average Index* of Crown Condition	3.50	3.21	2.68	2.65

* Derived from the average values for the 50 sample trees where:

Good = 4; Fair = 3; Poor = 2; Very Poor = 1; Dead = 0


Larch Mortality/
Bark Beetles
- Larch Stands Surveyed
- Larch Condition Monitoring Plots
AROOSTOOK
PISCATAQUIS
PENOBSCOT
SOMERSET
WASHINGTON
OXFORD
FRANKLIN
KENNEBEC
WALDO
HANCOCK
ANDROSCOGGIN
LINCOLN
KNOX
CUMBERLAND
YORK
SCALE - STATUTE MILES
0 10 20 30 40 50
71
70
69
68
67
47
46
45
44

MAINE
1986 PEST CONDITIONS REPORT WORK SHEET

PEST (COMMON NAME): Pales Weevil

(SPECIFIC NAME): *Hylobius pales*

HOST: Balsam Fir and Pines

PRESENT CONDITION: Occasional problem in plantations.

AREA (TOTAL ACRES): -

LOCATION: Centrol and Southern Maine

SEVERITY (INCLUDE ACRES OF MODERATE AND HEAVY DEFOLIATION OR INFECTION; DEFINE CLASSES): 2 ha light to moderate damage to balsam fir in Greene.

LOSSES (INCLUDE AREAS OF TREE MORTALITY; ALSO VOLUME AND/OR $ ESTIMATED): Losses are minimized by stump removal and other cultural practices.

TREND:

PAST TO PRESENT: Low levels

FUTURE: Maintain low levels through cultural practice.

CONTROL PROJECTS (METHOD, MATERIAL, ACRES, COST, RESULTS): None

COMMENTS:

MAINE
1986 PEST CONDITIONS REPORT WORK SHEET

PEST (COMMON NAME): Balsam Gall Midge

(SPECIFIC NAME): *Paradiplosis tumifex* Gagné

HOST: Balsam Fir, Christmas trees and ornamentals

PRESENT CONDITION: Endemic population

AREA (TOTAL ACRES): 0

LOCATION: Statewide

SEVERITY (INCLUDE ACRES OF MODERATE AND HEAVY DEFOLIATION OR INFECTION; DEFINE CLASSES): Currently no areas of known damage.

LOSSES (INCLUDE AREAS OF TREE MORTALITY; ALSO VOLUME AND/OR $ ESTIMATED):

TREND:

PAST TO PRESENT: Dropping to current endemic levels since 1984.

FUTURE: Pest is cyclic, however, no method currently exists to predict beginning of future outbreaks.

CONTROL PROJECTS (METHOD, MATERIAL, ACRES, COST, RESULTS): None

COMMENTS: Serious pest of the Xmas tree and wreath industry utilizing balsam fir which is cyclic and currently only known at endemic non-damaging levels.

MAINE

1986 PEST CONDITIONS REPORT WORK SHEET

PEST (COMMON NAME): Woolly Pine Needle Scale

(SPECIFIC NAME): *Schizolachnus piniradiatae*

HOST: Red Pine

PRESENT CONDITION:

AREA (TOTAL ACRES):

LOCATION: Southern Maine west of Penobscot Bay

SEVERITY (INCLUDE ACRES OF MODERATE AND HEAVY DEFOLIATION OR INFECTION; DEFINE CLASSES): No aphids found

LOSSES (INCLUDE AREAS OF TREE MORTALITY; ALSO VOLUME AND/OR $ ESTIMATED):

TREND:

PAST TO PRESENT:

FUTURE:

CONTROL PROJECTS (METHOD, MATERIAL, ACRES, COST, RESULTS):

COMMENTS: Eggs of what appeared to be this species were very abundant in the fall of 1985. No aphids were seen or reported in 1986 although we expected to see heavy populations in some areas.

MAINE
1986 PEST CONDITIONS REPORT WORK SHEET

PEST (COMMON NAME): Forest Tent Caterpillar

(SPECIFIC NAME): *Malacosoma disstria*

HOST: Primarily Poplar

PRESENT CONDITION: No known areas of noticeable defoliation

AREA (TOTAL ACRES):

LOCATION:

SEVERITY (INCLUDE ACRES OF MODERATE AND HEAVY DEFOLIATION OR INFECTION; DEFINE CLASSES):

LOSSES (INCLUDE AREAS OF TREE MORTALITY; ALSO VOLUME AND/OR $ ESTIMATED): Based on survey of 40 stands previously defoliated: Mortality of D/Co poplar remained relatively unchanged from 1985 to 1986 (approx. 10%). Level of branch dieback appears to be subsiding from 10% to 4% as the trees outgrow the damage and recover. Overall ba of apparently healthy trees (less than 1/3 of crown dead) has increased from 53 sq.ft./acre in 1983 to 100 sq.ft./acre in 1986. Radial growth data have not yet been collected.

TREND:

PAST TO PRESENT: Static @ endemic levels

FUTURE: No immediate change. Light trap catches indicate a slight decline in overall numbers caught in 1986 over 1985.

CONTROL PROJECTS (METHOD, MATERIAL, ACRES, COST, RESULTS): None

COMMENTS:

MAINE
1986 PEST CONDITIONS REPORT WORK SHEET

PEST (COMMON NAME): Pine Spittlebug

(SPECIFIC NAME): *Aphrophora parallela*

HOST: Pines and Balsam Fir

PRESENT CONDITION:

AREA (TOTAL ACRES):

LOCATION: Statewide

SEVERITY (INCLUDE ACRES OF MODERATE AND HEAVY DEFOLIATION OR INFECTION; DEFINE CLASSES): Spotty but locally heavy populations in 1986

LOSSES (INCLUDE AREAS OF TREE MORTALITY; ALSO VOLUME AND/OR $ ESTIMATED): None measured - possibly some flagging

TREND:

PAST TO PRESENT: Up in 1986

FUTURE: Not sure

CONTROL PROJECTS (METHOD, MATERIAL, ACRES, COST, RESULTS):

COMMENTS:

MAINE
1986 PEST CONDITIONS REPORT WORK SHEET

PEST (COMMON NAME): Balsam Woolly Aphid

(SPECIFIC NAME): *Adelges piceae*

HOST: Balsam Fir

PRESENT CONDITION:

AREA (TOTAL ACRES):

LOCATION:

SEVERITY (INCLUDE ACRES OF MODERATE AND HEAVY DEFOLIATION OR INFECTION; DEFINE CLASSES):

LOSSES (INCLUDE AREAS OF TREE MORTALITY; ALSO VOLUME AND/OR $ ESTIMATED):

TREND:

PAST TO PRESENT:

FUTURE:

CONTROL PROJECTS (METHOD, MATERIAL, ACRES, COST, RESULTS):

COMMENTS: The gout phase seems to be a continuing problem throughout but we have not surveyed specifically for this except in association with the spruce budworm. The woolly trunk phase has all but disappeared!

MAINE
1986 PEST CONDITIONS REPORT WORK SHEET

PEST (COMMON NAME): Fall Webworm

(SPECIFIC NAME): *Hyphantria cunea*

HOST: Various deciduous trees

PRESENT CONDITION:

AREA (TOTAL ACRES):

LOCATION: Southern half of the State

SEVERITY (INCLUDE ACRES OF MODERATE AND HEAVY DEFOLIATION OR INFECTION; DEFINE CLASSES): This is a nuisance insect of local significance

LOSSES (INCLUDE AREAS OF TREE MORTALITY; ALSO VOLUME AND/OR $ ESTIMATED):

TREND:

PAST TO PRESENT: Up in 1986 over 1985

FUTURE: Expected to rise again in 1987

CONTROL PROJECTS (METHOD, MATERIAL, ACRES, COST, RESULTS): None

COMMENTS:

MAINE
1986 PEST CONDITIONS REPORT WORK SHEET

PEST (COMMON NAME): Saddled Prominent

(SPECIFIC NAME): *Heterocampa guttivitta*

HOST: Northern Hardwoods

PRESENT CONDITION:

AREA (TOTAL ACRES):

LOCATION: Statewide

SEVERITY (INCLUDE ACRES OF MODERATE AND HEAVY DEFOLIATION OR INFECTION; DEFINE CLASSES): No defoliation noted in 1986.

LOSSES (INCLUDE AREAS OF TREE MORTALITY; ALSO VOLUME AND/OR $ ESTIMATED):

TREND:

PAST TO PRESENT: Numbers of moths increased generally overall for the third consecutive year.

FUTURE: We could expect to see detectable larval populations in 1987 and possibly defoliation as well.

CONTROL PROJECTS (METHOD, MATERIAL, ACRES, COST, RESULTS): None

COMMENTS:

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1986 PEST CONDITIONS REPORT WORK SHEET

PEST (COMMON NAME): Oak Leaftier

(SPECIFIC NAME): *Croesia semipurpurana*

HOST: Oak

PRESENT CONDITION:

AREA (TOTAL ACRES):

LOCATION: Throughout the oak forest type.

SEVERITY (INCLUDE ACRES OF MODERATE AND HEAVY DEFOLIATION OR INFECTION; DEFINE CLASSES): Only limited spots of noticeable defoliation

LOSSES (INCLUDE AREAS OF TREE MORTALITY; ALSO VOLUME AND/OR $ ESTIMATED): Over the past five years or so we have begun to see higher than anticipated mortality in oak stands which had been previously defoliated by the oak leaftier. Although we have not established a cause-effect relationship we expect to find that several years of severe oak leaftier defoliation can stress even fairly vigorous oak beyond the point of recovery.

TREND:

PAST TO PRESENT: Populations were generally up slightly in 1986 from 1985 levels.

FUTURE: Very likely we will see increasing populations again in 1987.

CONTROL PROJECTS (METHOD, MATERIAL, ACRES, COST, RESULTS): None

COMMENTS:

MAINE
1986 PEST CONDITIONS REPORT WORK SHEET

PEST (COMMON NAME): Spruce Beetle

(SPECIFIC NAME): *Dendroctonus rufipennis*

HOST: *Picea* spp.

PRESENT CONDITION:

AREA (TOTAL ACRES): 1,000 acres ± in T12 R11; several other areas have been reported but have not been checked.
LOCATION: Where susceptible hosts exist.

SEVERITY (INCLUDE ACRES OF MODERATE AND HEAVY DEFOLIATION OR INFECTION; DEFINE CLASSES): Moderate to heavy populations of this beetle throughout this stand in T12 R11. The stand is a classic case of large spruce (primarily white) along a water course which have been defoliated in the past by spruce budworm.

LOSSES (INCLUDE AREAS OF TREE MORTALITY; ALSO VOLUME AND/OR $ ESTIMATED): Moderate to heavy losses of large white spruce can be expected in the T12 R11 infestation.

TREND:

PAST TO PRESENT: We have just begun to look into the extent of this problem but the incidence of cases such as that found in T12 R11 may be greater than we thought.

FUTURE: Not sure at this point

CONTROL PROJECTS (METHOD, MATERIAL, ACRES, COST, RESULTS): None planned

COMMENTS: Management methods for large residual spruce throughout the State has been the subject of controversy. We plan to look into this aspect-management to minimize losses to the spruce beetle.

We were interested to see the association of the veiled polypore (*Cryptoporus* (*Polyporus*) *volvatus*) with the spruce beetle in T12 R11. The sporophore is very visible and unique.

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1986 PEST CONDITIONS REPORT WORK SHEET

PEST (COMMON NAME): Saratoga Spittlebug

(SPECIFIC NAME): *Aphrophora saratogensis*

HOST: Pines especially red

PRESENT CONDITION:

AREA (TOTAL ACRES): Less than 500 acres

LOCATION: T19 MD (100 acres ±) and other scattered but smaller eastern Maine plantations.

SEVERITY (INCLUDE ACRES OF MODERATE AND HEAVY DEFOLIATION OR INFECTION; DEFINE CLASSES): Moderate to severe browning over 100 acres of 2 to 3 foot red pine in T19 MD. Light damage to adjacent jack pine and taller red pine. Light to moderate browning which was spotty in a number of additional red pine plantations.

LOSSES (INCLUDE AREAS OF TREE MORTALITY; ALSO VOLUME AND/OR $ ESTIMATED): We can expect heavy losses of planted stock in T19 MD and possibly as much as 10% in other scattered areas.

TREND:

PAST TO PRESENT: 1986 was the first season for a number of years in which we have seen browning of this extent.

FUTURE: As more plantations are established we may see more of this type of injury unless an effort is made to deal with this spittlebug.

CONTROL PROJECTS (METHOD, MATERIAL, ACRES, COST, RESULTS): None planned.

COMMENTS:

MAINE
1986 PEST CONDITIONS REPORT WORK SHEET

PEST (COMMON NAME): Bruce Spanworm

(SPECIFIC NAME): *Operophtera bruceata*

HOST: Sugar Maple and Trembling Aspen

PRESENT CONDITION:

AREA (TOTAL ACRES):

LOCATION: Northern half of the State

SEVERITY (INCLUDE ACRES OF MODERATE AND HEAVY DEFOLIATION OR INFECTION; DEFINE CLASSES): No defoliation reported

LOSSES (INCLUDE AREAS OF TREE MORTALITY; ALSO VOLUME AND/OR $ ESTIMATED):

TREND:

PAST TO PRESENT: Populations remain at rather low levels

FUTURE: Not sure

CONTROL PROJECTS (METHOD, MATERIAL, ACRES, COST, RESULTS): None

COMMENTS: This species and other cankerworms have been generally low in numbers for several years.

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1986 PEST CONDITIONS REPORT WORK SHEET

PEST (COMMON NAME): Conifer Sawflies

(SPECIFIC NAME): Several species

HOST: Conifers

PRESENT CONDITION:

AREA (TOTAL ACRES):

LOCATION:

SEVERITY (INCLUDE ACRES OF MODERATE AND HEAVY DEFOLIATION OR INFECTION; DEFINE CLASSES):

LOSSES (INCLUDE AREAS OF TREE MORTALITY; ALSO VOLUME AND/OR $ ESTIMATED):

TREND:

PAST TO PRESENT: Low numbers throughout

FUTURE: Not known

CONTROL PROJECTS (METHOD, MATERIAL, ACRES, COST, RESULTS):

COMMENTS: Conifer sawflies continue to be very spotty and no reports of significant defoliation by any species has been reported for several years.

MAINE

1986 PEST CONDITIONS REPORT WORK SHEET

PEST (COMMON NAME): Spruce coneworm

(SPECIFIC NAME): Dioryctria reniculelloides

HOST: Red Spruce (predominantely)

PRESENT CONDITION:

AREA (TOTAL ACRES): 200,000 acres

LOCATION: East central Hancock and west central Washington Counties

SEVERITY: (INCLUDE ACRES OF MODERATE AND HEAVY DEFOLIATION OR INFECTION: DEFINE CLASSES):

Predicted coneworm populations for the area delineated are trace to light. Predicted defoliation for the area in 1987 is trace to a maximum of 10% on red spruce.

LOSSES (INCLUDE AREAS OF TREE MORTALITY; ALSO VOLUME AND/OR $ ESTIMATED):

None at present; past coneworm populations have contributed to 10 to 50% of the defoliation which occurred on red spruce which was also infested by spruce budworm.

TREND:

PAST TO PRESENT: Coneworm populations were highest in eastern Maine and portions of northwestern Maine in 1983 and 1984. Since 1984 coneworm numbers have paralleled spruce budworm in a sharp statewide decline. The last areas of moderate coneworm infestations to persist were in Hancock and Washington Counties in 1985.

FUTURE: Coneworm populations are expected to remain low statewide for an indefinite period, but at least through 1987.

CONTROL PROJECTS (METHOD, MATERIAL, ACRES, COST, RESULTS): None

COMMENTS: Coneworm populations were not surveyed by the overwintering method prior to 1980, but since 1980 coneworm numbers seem to be closely related to spruce budworm numbers. In areas of heavy red spruce stocking in the southeast and northwest coneworm numbers remained high for a season after budworm began to decline.

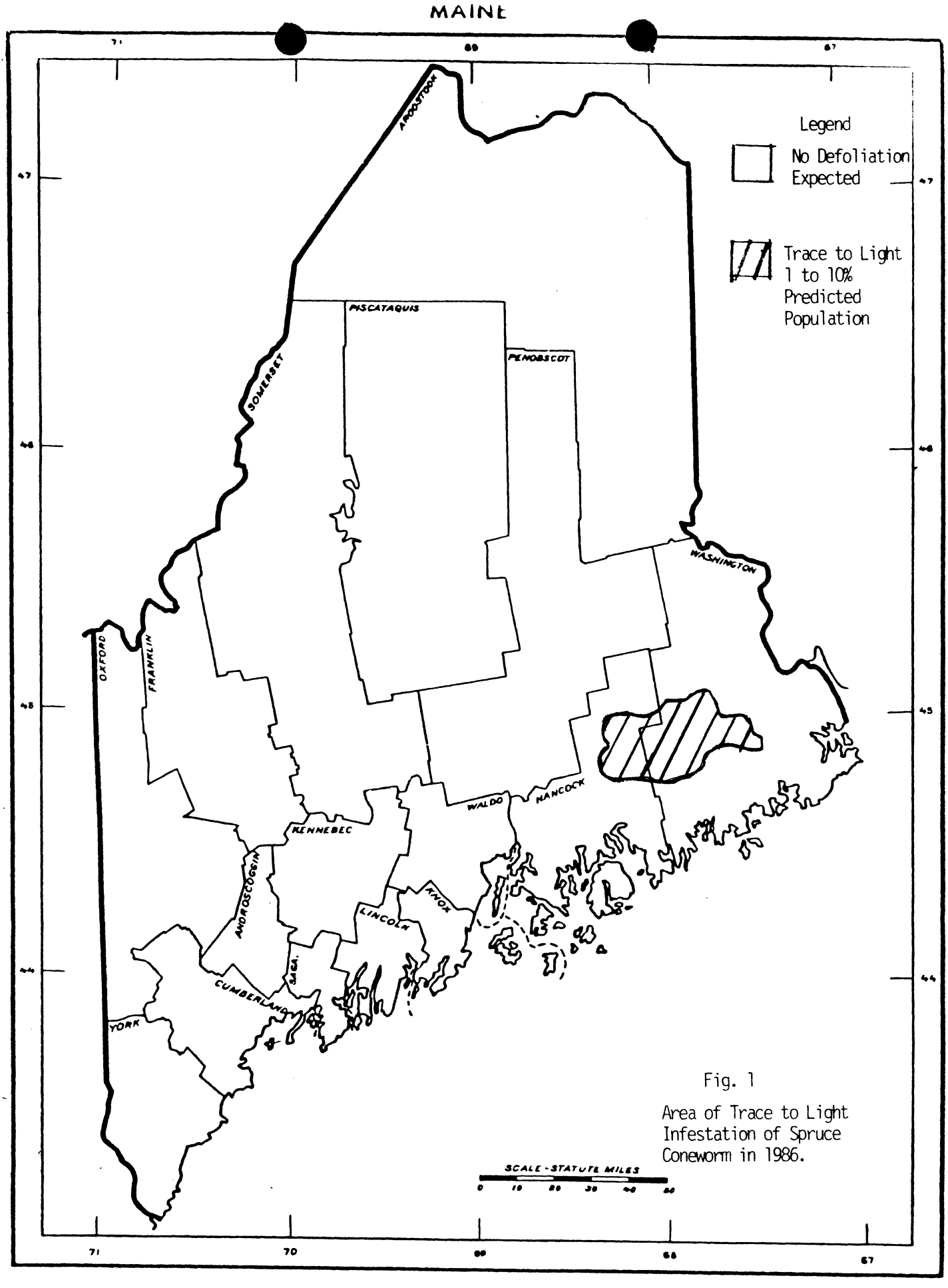


Fig. 1

Area of Trace to Light Infestation of Spruce Coneworm in 1986.

MAINE
1986 PEST CONDITIONS REPORT WORK SHEET

PEST (COMMON NAME): Oystershell Scale

(SPECIFIC NAME): *Lepidosaphes ulmi*

HOST: Primarily beech. Also occurs on white ash, white & yellow birch, and sugar maple.

PRESENT CONDITION:

AREA (TOTAL ACRES): Approximately 5,000 acres of heavy-severe damage.

LOCATION: Beech/sugar maple/yellow **birch** type across southern 1/2 of state (map)

SEVERITY (INCLUDE ACRES OF MODERATE AND HEAVY DEFOLIATION OR INFECTION; DEFINE CLASSES): 5,000 + acres of top die-back, tip mortality, understory mortality. Scale-induced flagging of branch tips observed in approximately 95 twps.

LOSSES (INCLUDE AREAS OF TREE MORTALITY; ALSO VOLUME AND/OR $ ESTIMATED): Mortality of overstory trees is minimal to date, and is associated with beech scale/nectria infestations. In heavily infested areas virtually all the beech regeneration has been killed. Some yellow birch regeneration has been killed. Sugar maple regeneration is showing heavy leader and branch mortality.

TREND:

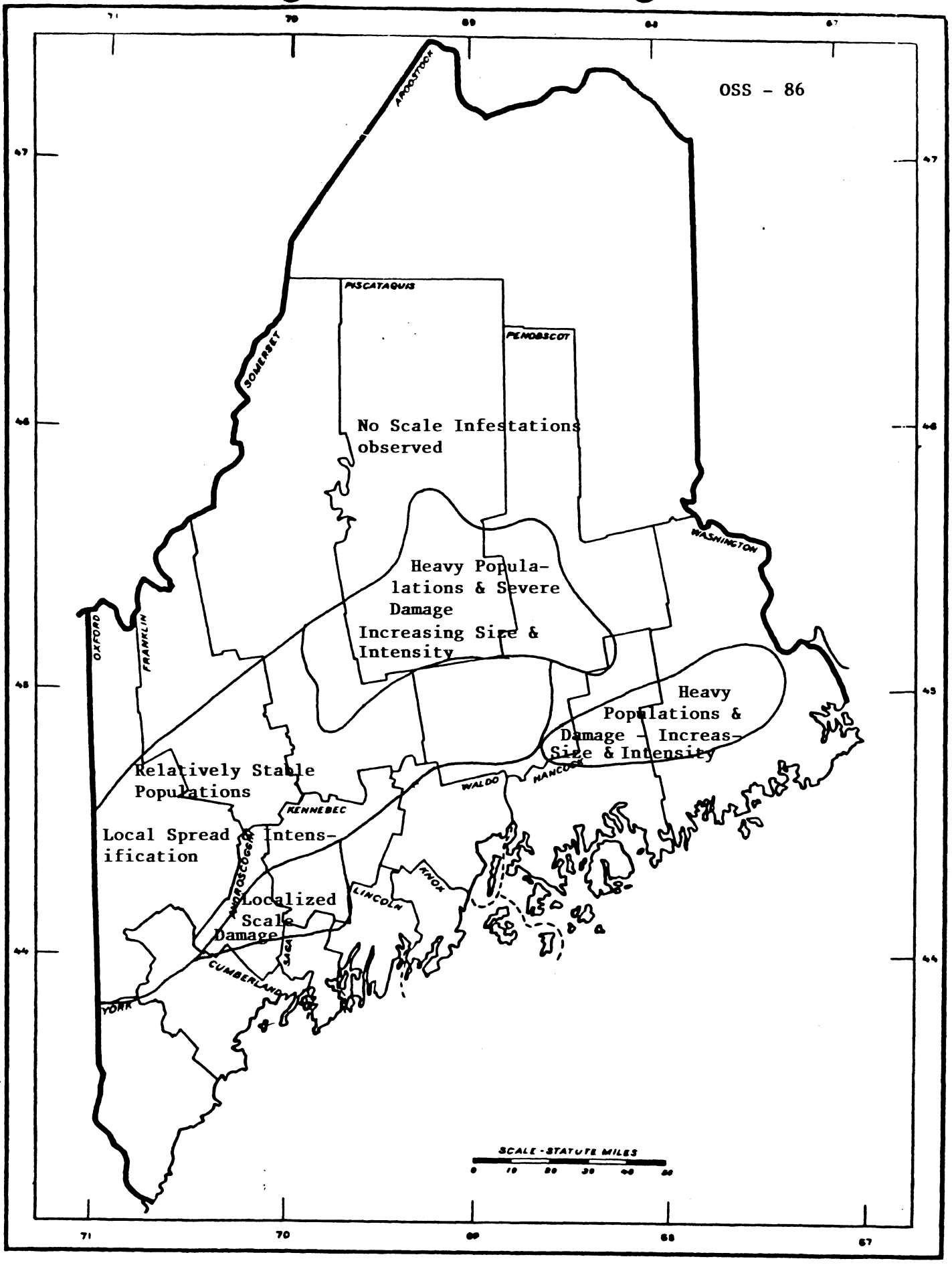
PAST TO PRESENT: Increasing size & intensity in previously infested areas in central Maine (500+ acres, 1985; 5,000 acres, 1986). Newly discovered heavy infestations have been found well removed from previous infestations.

FUTURE: Unknown

CONTROL PROJECTS (METHOD, MATERIAL, ACRES, COST, RESULTS): None conducted.

COMMENTS:

MAINE


OSS - 86
AROOSTOOK
PISCATAQUIS
PENOBSCOT
SOMERSET
No Scale Infestations observed
Heavy Populations & Severe Damage Increasing Size & Intensity
WASHINGTON
OXFORD
FRANKLIN
Heavy Populations & Damage - Increasing Size & Intensity
Relatively Stable Populations
WALDO
HANCOCK
KENNEBEC
Local Spread & Intensification
KNOX
LINCOLN
Localized Scale Damage
CUMBERLAND
YORK
SCALE - STATUTE MILES
0 10 20 30 40 50
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MAINE
1986 PEST CONDITIONS REPORT WORK SHEET

PEST (COMMON NAME): Spruce Gall Adelgids

(SPECIFIC NAME): *Adelges* spp. (incl. *abietus*)

HOST: Spruces

PRESENT CONDITION:

AREA (TOTAL ACRES):

LOCATION: Central and Northern Maine

SEVERITY (INCLUDE ACRES OF MODERATE AND HEAVY DEFOLIATION OR INFECTION; DEFINE CLASSES): <85% of new shoots infested in the most heavily hit areas.

LOSSES (INCLUDE AREAS OF TREE MORTALITY; ALSO VOLUME AND/OR $ ESTIMATED): Significant defoliation has occurred in various plantings in the central and northern portions of the state.

TREND:

PAST TO PRESENT: Populations are apparently increasing

FUTURE: Unknown

CONTROL PROJECTS (METHOD, MATERIAL, ACRES, COST, RESULTS): None

COMMENTS:

MAINE
1986 PEST CONDITIONS REPORT WORK SHEET

PEST (COMMON NAME): Spruce Bud Moth

(SPECIFIC NAME): *Zeiraphera canadensis*

HOST: White Spruce : *Picea glauca*

PRESENT CONDITION: Common throughout Northern and coastal areas of the state.

AREA (TOTAL ACRES): Unknown

LOCATION: Northern Me. and Eastern coastal areas

SEVERITY (INCLUDE ACRES OF MODERATE AND HEAVY DEFOLIATION OR INFECTION; DEFINE CLASSES): Moderate to heavy in Millinocket-Patten area; moderate to heavy in Northeast portion of the state.

LOSSES (INCLUDE AREAS OF TREE MORTALITY; ALSO VOLUME AND/OR $ ESTIMATED): Some growth loss and stem deformation.

TREND:

PAST TO PRESENT: Increasing as more of the white spruce plantings from the 1970's become large enough to be suitable hosts.

FUTURE: Increasing problems expected.

CONTROL PROJECTS (METHOD, MATERIAL, ACRES, COST, RESULTS): Aerial control trials planned for 1987.

COMMENTS: This may become a very serious pest as it is in New Brunswick, Canada.

The current trend among paper producing companies is to plant other species because of this pest.

MAINE
1986 PEST CONDITIONS REPORT WORK SHEET

PEST (COMMON NAME): Arborvitae Leaf Miners

(SPECIFIC NAME): *Argyresthia thuiella; A. freyella; A. aureoargentella & Recurvaria thujaella*

HOST: Northern White Cedar - *Thuja occidentalis*

PRESENT CONDITION: Endemic Northern and Central; epidemic extreme Eastern

AREA (TOTAL ACRES): Unknown

LOCATION: Central, Eastern & Northern Maine

SEVERITY (INCLUDE ACRES OF MODERATE AND HEAVY DEFOLIATION OR INFECTION; DEFINE CLASSES): Moderate-heavy defoliation in Machias to Eastport area; light over most of the remaining arborvitae type of the state.

LOSSES (INCLUDE AREAS OF TREE MORTALITY; ALSO VOLUME AND/OR $ ESTIMATED): Not known because adequate data has not been collected. Growth losses are apparently high in many areas although $ figures are unavailable. Arborvitae is currently under utilized.

TREND:

PAST TO PRESENT: Increased in Eastern Maine; endemic in Central and Northern Maine

FUTURE: Endemic statewide?

CONTROL PROJECTS (METHOD, MATERIAL, ACRES, COST, RESULTS): None in 1986.

COMMENTS: Due to scattered pattern of stands exact or even approximate acreage estimates are very difficult.

As the species increases in value an increased emphasis must be placed on this pest due to the heavy growth loss and potential mortality.

MAINE
1986 PEST CONDITIONS REPORT WORK SHEET

PEST (COMMON NAME): White Pine Weevil

(SPECIFIC NAME): *Pissodes strobi* (Peck)

HOST: White Pine as well as many other *Pinus* spp. & *Picea* spp.

PRESENT CONDITION:

AREA (TOTAL ACRES):

LOCATION: Statewide

SEVERITY (INCLUDE ACRES OF MODERATE AND HEAVY DEFOLIATION OR INFECTION; DEFINE CLASSES): A very severe pest in the state causing heavy financial losses due to down grading of sawlogs to pulp.

LOSSES (INCLUDE AREAS OF TREE MORTALITY; ALSO VOLUME AND/OR $ ESTIMATED): Losses occur through the deforming of stems which thereby reduces high quality sawlogs to pulpwood status.

TREND:

PAST TO PRESENT: Weevil populations and resulting damage remain high throughout the state.

FUTURE: Unless protected 1-4 meter pine will continue to be deformed by this pest.

CONTROL PROJECTS (METHOD, MATERIAL, ACRES, COST, RESULTS): Ground control is done operationally on 200 ha of commercial forest.

M.F.S. conducted ground spray trials in '86 in Burnham (.35 ha) and in Vassalboro (.35 ha) using a mistblower and a compressed air sprayer.

COMMENTS: Asana, permethrin, fluvalinate, methoxyclor, oxydemetor-methyl, and Tanglefoot® were tested.

MAINE
1986 PEST CONDITIONS REPORT WORK SHEET

PEST (COMMON NAME): Pests of Regeneration

(SPECIFIC NAME): Miscellaneous pests including Mound Ants, *Cinara* spp.; *Hylobius congener* - see also *Hylobius pales*; Shoestring Root Rot; Fir-Fern Rust; Spruce Budmoth; Spruce Gall Aphid

HOST: Various Conifers

PRESENT CONDITION:

AREA (TOTAL ACRES):

LOCATION: Statewide

SEVERITY (INCLUDE ACRES OF MODERATE AND HEAVY DEFOLIATION OR INFECTION; DEFINE CLASSES): Moderate to heavy damage by misc. pests in very localized areas.

LOSSES (INCLUDE AREAS OF TREE MORTALITY; ALSO VOLUME AND/OR $ ESTIMATED): No significant losses presently known

TREND:

PAST TO PRESENT: Stable levels

FUTURE: May become more significant with increased emphasis on both natural and artificial regeneration of commercial forests.

CONTROL PROJECTS (METHOD, MATERIAL, ACRES, COST, RESULTS):

COMMENTS: Plantations are monitored throughout the state. Currently no major pest species has been found on conifers in plt. causing widespread damage.

MAINE
1986 PEST CONDITIONS REPORT WORK SHEET

PEST (COMMON NAME): Browntail Moth

(SPECIFIC NAME): *Euproctis chrysorrhoea*

HOST: Rose, raspberry, bayberry, willow, cherry

PRESENT CONDITION:

AREA (TOTAL ACRES): 40 ± acres heavy. Total acreage of islands where BTM found in 1986 = 1850 acres.
LOCATION: Significant populations on House, Long and Vaill Islands (Casco Bay). Viable webs also found on Peaks & Cliff Islands

SEVERITY (INCLUDE ACRES OF MODERATE AND HEAVY DEFOLIATION OR INFECTION; DEFINE CLASSES): 40 ± acres total on 3 islands where webs are common. Low level incidence could be much larger.

LOSSES (INCLUDE AREAS OF TREE MORTALITY; ALSO VOLUME AND/OR $ ESTIMATED): No known tree or shrub mortality noted

TREND:

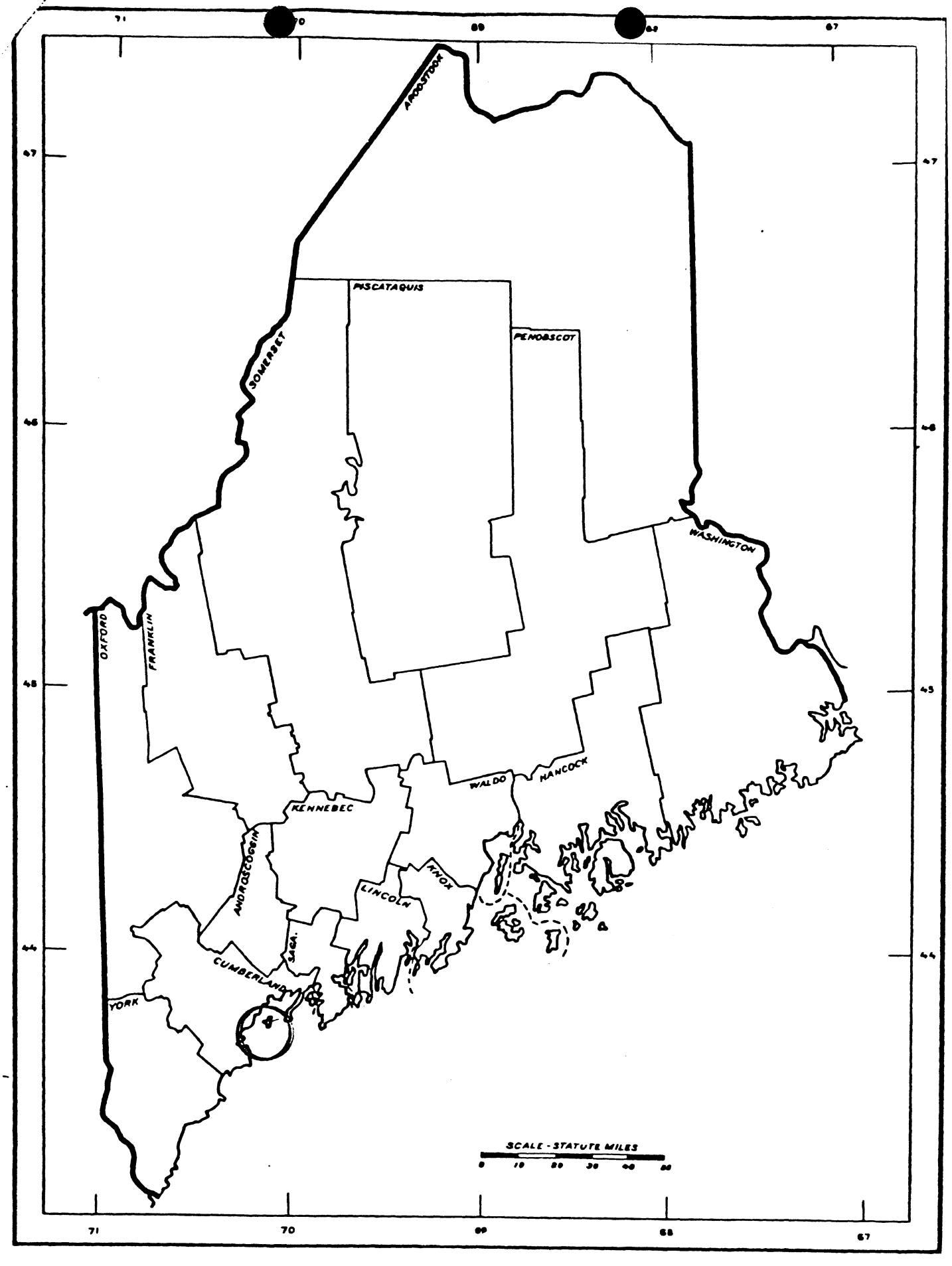
PAST TO PRESENT: Doubled in intensity in known areas from 1985-1986. New infestation on Long Island (none there in 1984)

FUTURE: Unknown - potential intensification & spread

CONTROL PROJECTS (METHOD, MATERIAL, ACRES, COST, RESULTS): Incidental control practiced by destructively sampling (clipping webs). The present population increase indicates that this activity will not necessarily achieve control even in discreet areas although it may lessen buildup and damage.

COMMENTS:

MAINE


AROOSTOOK
PISCATAQUIS
PENOBSCOT
SOMERSET
WASHINGTON
OXFORD
FRANKLIN
WALDO
HANCOCK
KENNEBEC
ANDROSCOGGIN
KNOX
LINCOLN
SAG.
CUMBERLAND
YORK
SCALE - STATUTE MILES
0 10 20 30 40 50
71
70
69
68
67
47
46
45
44

MAINE
1986 PEST CONDITIONS REPORT WORK SHEET

PEST (COMMON NAME): Birch Casebearer

(SPECIFIC NAME): *Coleophora serratella*

HOST: Primarily White Birch

PRESENT CONDITION:

AREA (TOTAL ACRES): Previous areas of contiguous defoliation dissipating into discreet spots totaling less than 1500 acres
LOCATION: Whiting (Washington Co.) and Rangeley Plt. (Franklin Co.)

SEVERITY (INCLUDE ACRES OF MODERATE AND HEAVY DEFOLIATION OR INFECTION; DEFINE CLASSES): Heavy (51-75% defoliation) on 1500 ± acres (500 Washington Co. 1000 ± Franklin Co.)

LOSSES (INCLUDE AREAS OF TREE MORTALITY; ALSO VOLUME AND/OR $ ESTIMATED): No measurements for the total type. Currently 193,000 acres heavily defoliated in 1983 show 1/2 D/Co. white birch basal area with branch mortality and top dieback. Analogous stands outside the defoliated area show less than 20% of the D/Co. white birch ba similarly affected. Crown condition continues to decline. (more below)

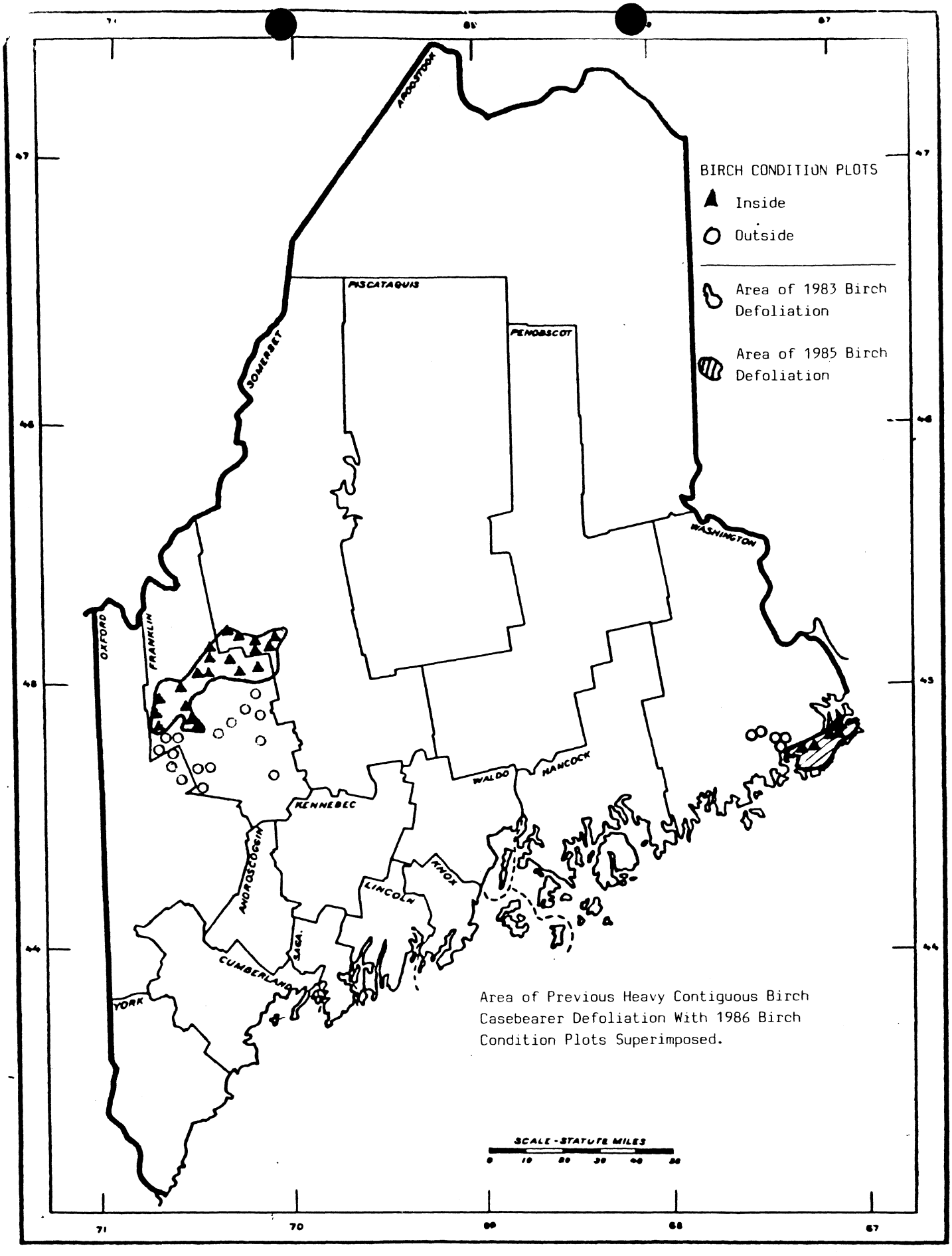
TREND:

PAST TO PRESENT: Casebearer populations stable over most of the area

FUTURE: Some indication of spot intensification, but population prediction surveys not yet taken.

CONTROL PROJECTS (METHOD, MATERIAL, ACRES, COST, RESULTS):

COMMENTS: Current measurements in the Washington Co. defoliated area indicate 1/3 the D/Co. white birch ba has, or is currently, declining. Adjacent undefoliated areas show similar symptoms on 6% of the D/Co. ba. These values are analogous to those from the Rangeley area in 1985. If the situations follow similar trends, the white birch condition in this area of Washington Co. will worsen. See Map.


BIRCH CONDITION PLOTS
Inside
Outside
Area of 1983 Birch Defoliation
Area of 1985 Birch Defoliation
AROOSTOOK
PISCATAQUIS
PENOBSCOT
SOMERSET
WASHINGTON
OXFORD
FRANKLIN
WALDO
HANCOCK
KENNEBEC
ANDROSCOGGIN
KNOX
LINCOLN
SAG.
CUMBERLAND
YORK
Area of Previous Heavy Contiguous Birch Casebearer Defoliation With 1986 Birch Condition Plots Superimposed.
SCALE - STATUTE MILES
0 10 20 30 40 50
71
70
69
68
67
47
46
45
44

MAINE

1986 PEST CONDITIONS REPORT WORK SHEET

PEST (COMMON NAME): Hardwood Defoliators

(SPECIFIC NAME): Several such as *Symmerista, Dryocampa & Pheosia*

HOST: Beech and Maple

PRESENT CONDITION:

AREA (TOTAL ACRES):

LOCATION:

SEVERITY (INCLUDE ACRES OF MODERATE AND HEAVY DEFOLIATION OR INFECTION; DEFINE CLASSES): No significant defoliation - A curiosity

LOSSES (INCLUDE AREAS OF TREE MORTALITY; ALSO VOLUME AND/OR $ ESTIMATED):

TREND:

PAST TO PRESENT: 1986 was an unusual year to find a variety of these and other hardwood defoliators. Many had not been seen for a number of years in our Forest Insect Survey.

FUTURE:

CONTROL PROJECTS (METHOD, MATERIAL, ACRES, COST, RESULTS):

COMMENTS:

MAINE
1986 PEST CONDITIONS REPORT WORK SHEET

PEST (COMMON NAME): Pinewood Nematode

(SPECIFIC NAME): *Bursaphelenchus xylophilus*

HOST: White Pine

PRESENT CONDITION:

AREA (TOTAL ACRES): Only known presently from two areas (less than 10 acres).
LOCATION: Whitefield, Baldwin

SEVERITY (INCLUDE ACRES OF MODERATE AND HEAVY DEFOLIATION OR INFECTION; DEFINE CLASSES): Scattered mortality occurring, but unable to determine exact cause since other factors involved; i.e., Armillaria root rot, Caliciopsis canker, Septobasidium/Matsucoccus complex.

LOSSES (INCLUDE AREAS OF TREE MORTALITY; ALSO VOLUME AND/OR $ ESTIMATED): Due to limited information available at present regarding direct-cause mortality and extent of the problem, current losses are only estimated at less than $500 because salvage is possible.

TREND:

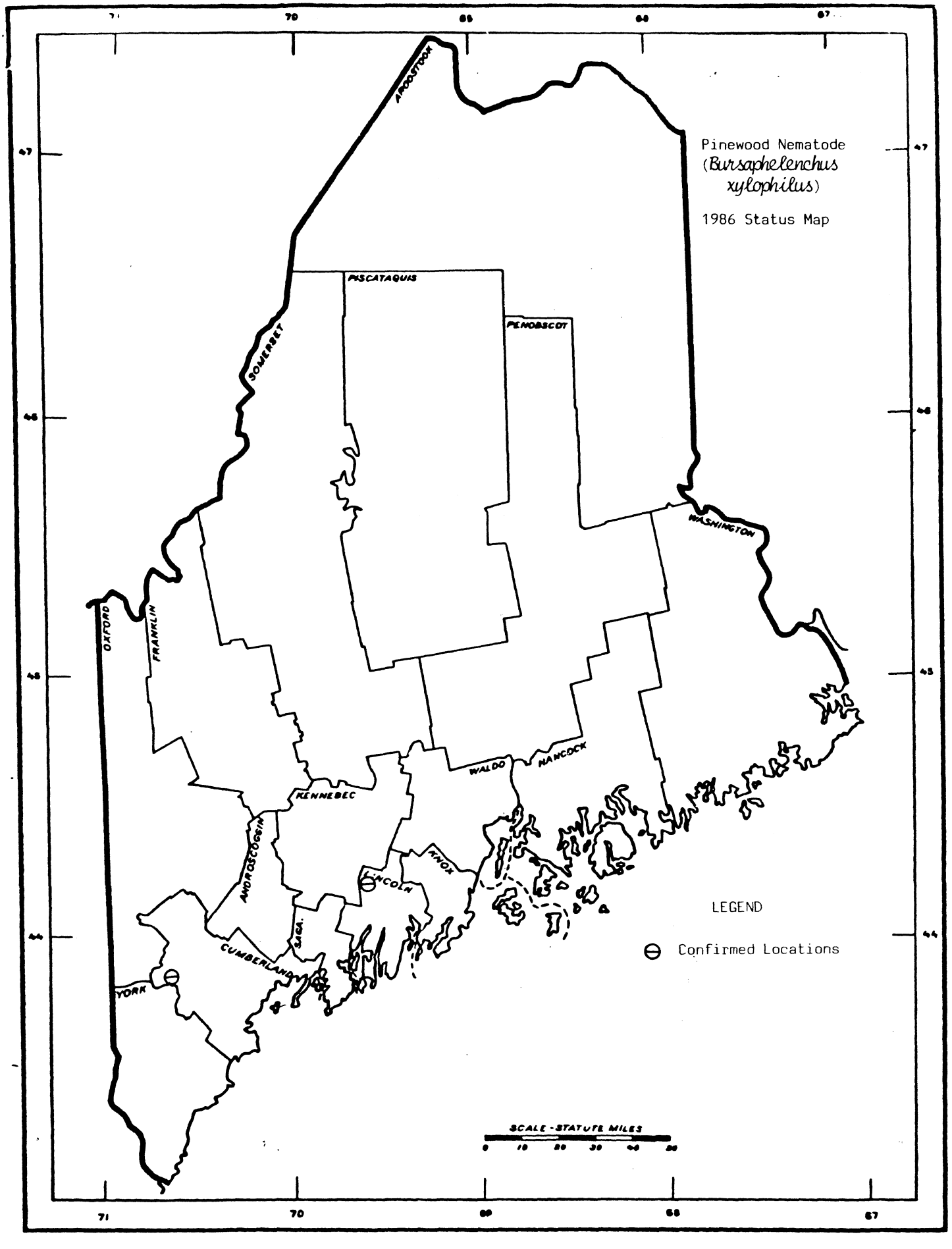
PAST TO PRESENT: Not verified from Maine until Oct. 29, 1986 (by Shari Halik, Research Technician, U. Vt., Burlington).

FUTURE: Expect to find it statewide with continued, expanded sampling of pine, since pine appears to be the species from which the nematode is most easily extracted.

CONTROL PROJECTS (METHOD, MATERIAL, ACRES, COST, RESULTS): None, except salvage cuts.

COMMENTS: The Whitefield sample contained borers. The Baldwin sample was from trees also affected with Armillaria root rot (about 40% of moribund trees checked) and canciopsis canker (*Caliciopsis pinea*) also present at Baldwin were the Septobasidium/Matsucoccus complex (*Septobasidium pinicola/Matsucoccus macrocicatrices*). Affected trees exhibited heavy mid-crown pitching associated with buried Matsucoccus-caused pitch pockets and large upper bole areas affected with dead phloem and cambium.

MAINE


Pinewood Nematode
(Bursaphelenchus xylophilus)
1986 Status Map
AROOSTOOK
PISCATAQUIS
PENOBSCOT
SOMERSET
WASHINGTON
OXFORD
FRANKLIN
WALDO
HANCOCK
KENNEBEC
ANDROSCOGGIN
KNOX
LINCOLN
SAGA.
CUMBERLAND
YORK
LEGEND
Confirmed Locations
SCALE - STATUTE MILES
0 10 20 30 40 50
71
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MAINE
1986 PEST CONDITIONS REPORT WORK SHEET

PEST (COMMON NAME): Rhabdocline Needlecast

(SPECIFIC NAME): *Rhabdocline pseudotsugae*

HOST: Douglas-fir

PRESENT CONDITION:

AREA (TOTAL ACRES): 100 (estimated)

LOCATION: Statewide. In 1986 in Cornville, Nobleboro, Greenbush and Orland

SEVERITY (INCLUDE ACRES OF MODERATE AND HEAVY DEFOLIATION OR INFECTION; DEFINE CLASSES):
Light - 1985 needles only infected
Heavy - all but 1986 needles infected, trees only holding 1986 needles

LOSSES (INCLUDE AREAS OF TREE MORTALITY; ALSO VOLUME AND/OR $ ESTIMATED):
Merchantible trees (cut-your-own) $15/tree
Merchantible trees (wholesale) $20/tree, up
Heavy infection rates have resulted in abandonment of plantations established for Christmas tree production.

TREND:

PAST TO PRESENT: 30 years ago 1 or 2 locations known. Incidence increased, until virtually every plantation site infected.

FUTURE: Nursery stock has to be certified as clean, or raising this species for Christmas trees will be a financial disaster.

CONTROL PROJECTS (METHOD, MATERIAL, ACRES, COST, RESULTS): Cultural controls and site, aspect plantation establishment that encouraged good air drainage will help minimize impact. Chlorothalonil properly applied & timely, starting when trees 3' high should yield healthy trees.

COMMENTS: Generally, both needlecasts (incl. Swiss) found at the same site. In the 1986 locations above, however, only the rhabdocline needlecast occurred in Orland. As in the past, individual tree susceptibility varies from virtually immune, to extremely susceptible. Those trees exhibiting a high rate of susceptibility should be rogued out and destroyed as soon as detected to cut down on inoculum levels.

Note: No Douglas-fir seedlings being grown at Greenbush Nursery

MAINE
1986 PEST CONDITIONS REPORT WORK SHEET

PEST (COMMON NAME): Swiss Needlecast

(SPECIFIC NAME): Phaeocryptopus gaumanni

HOST: Douglas-fir

PRESENT CONDITION:

AREA (TOTAL ACRES): 100 (estimated)

LOCATION: Statewide. In 1986 in Cornville, Oakfield, Noblebcro and Greenbush.

SEVERITY (INCLUDE ACRES OF MODERATE AND HEAVY DEFOLIATION OR INFECTION; DEFINE CLASSES): (See Rhabdocline classes) combined with Rhabdocline needlecast, has resulted in complete defoliation except for current year's needles.

LOSSES (INCLUDE AREAS OF TREE MORTALITY; ALSO VOLUME AND/OR $ ESTIMATED): See Rhabdocline needlecast (same)

TREND:

PAST TO PRESENT: Swiss needlecast incidence lagged behind Rhabdocline in the past, but are generally found together at present. The exception was the Oakfield location, where Swiss was the only cast present.

FUTURE: Douglas-fir nursery stock has to be certified as disease-free. There are too many incidents of the disease cropping up in isolated locations. A good question is "How far can spores travel and remained infective?"

CONTROL PROJECTS (METHOD, MATERIAL, ACRES, COST, RESULTS): Same as for Rhabdocline needlecast - timing slightly later, however.

COMMENTS: There are several abandoned plantations around that contain highly resistant individuals to both needlecasts. This must be a commonplace occurrence, yet I know of no attempt to establish a seed orchard comprised of such individuals.

Another thought. How effective are nursery inspections to detect needlecasts (Swiss & Rhabdocline)? Since most plantations look good for the first 4-5 years, where is the infection coming from in these isolated plantations?

MAINE
1986 PEST CONDITIONS REPORT WORK SHEET

PEST (COMMON NAME): Scleroderris Canker

(SPECIFIC NAME): *Gremmeniella abietina*

HOST: Red Pine

PRESENT CONDITION:

AREA (TOTAL ACRES): Approximately 40

LOCATION: Eustis, Coplin Plantation, T19 MD, Aurora

SEVERITY (INCLUDE ACRES OF MODERATE AND HEAVY DEFOLIATION OR INFECTION; DEFINE CLASSES): All 4 areas have been stabilized with no expansion in acreage for the past 3 years. Only occasional flagging occurred and this was handled by sanitation low pruning.

LOSSES (INCLUDE AREAS OF TREE MORTALITY; ALSO VOLUME AND/OR $ ESTIMATED): No loss in 1986; i.e. no Christmas tree plantations found affected.

TREND:

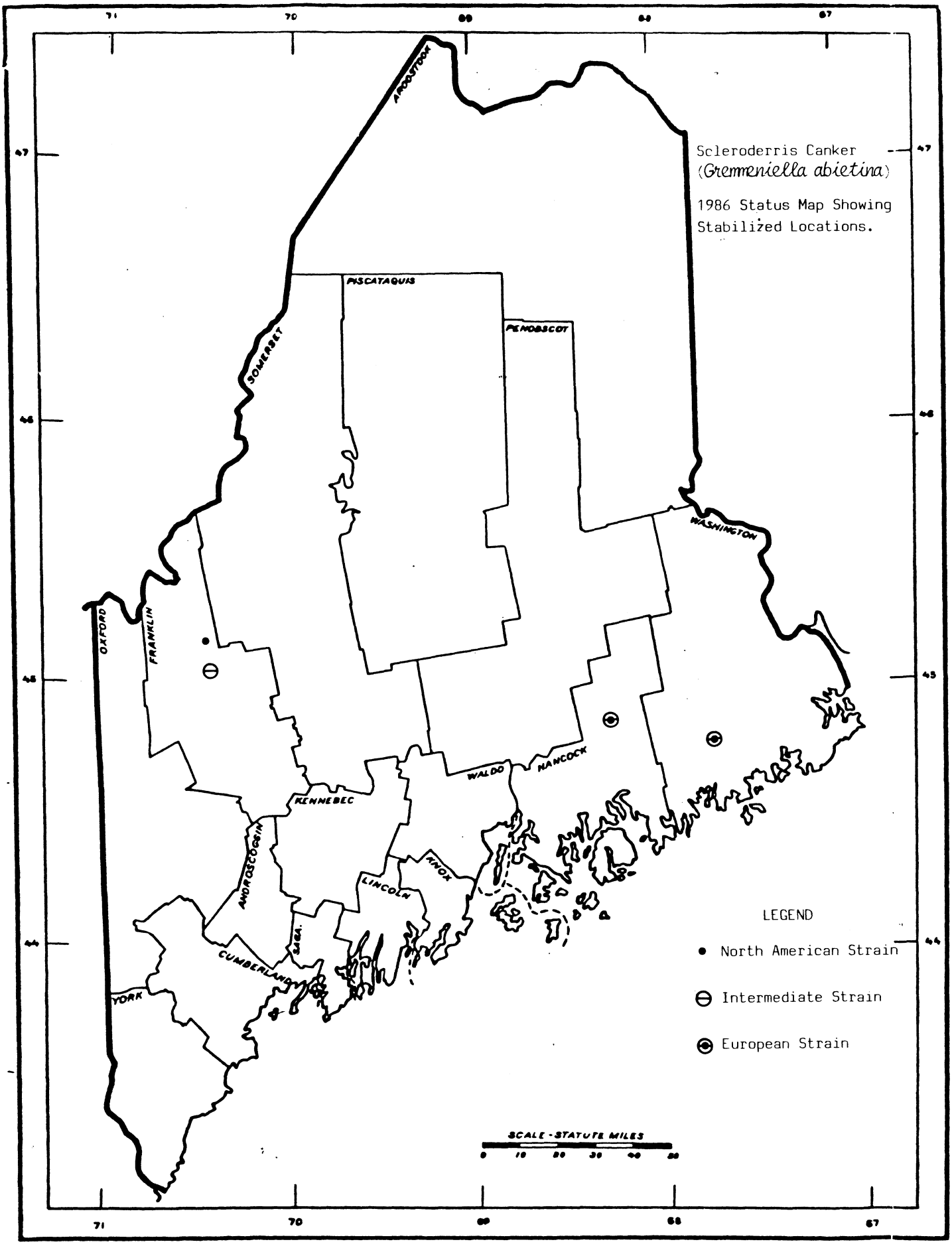
PAST TO PRESENT: In the past, all 3 strains (North American, intermediate and European) were found individually at the 4 sites. No new sites found in the past 3 years.

FUTURE: This disease will become an incidental problem here in the Northeast providing low pruning sanitation/eradication is practiced on existing, known sites. The lack of control measures on the Adirondack preserve should not be tolerated if this is in fact the case.

CONTROL PROJECTS (METHOD, MATERIAL, ACRES, COST, RESULTS): Low pruning of symptomatic trees during annual survey inspections. Still present only in Eustis (N.A. strain) and Aurora (European strain). No new infection noted in Coplin Plt. and T19 MD.

COMMENTS: I have been expecting an outbreak in the Madawaska-Van Buren-Houlton area because of the incidence across the border in Canada; however, this has not materialized.

MAINE


Scleroderris Canker
(Gremmeniella abietina)
1986 Status Map Showing
Stabilized Locations.
AROOSTOOK
PISCATAQUIS
PENOBSCOT
SOMERSET
WASHINGTON
OXFORD
FRANKLIN
WALDO
HANCOCK
KENNEBEC
ANDROSCOGGIN
KNOX
LINCOLN
CUMBERLAND
YORK
LEGEND
North American Strain
Intermediate Strain
European Strain
SCALE - STATUTE MILES
0 10 20 30 40 50
71
70
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68
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47
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44

MAINE
1986 PEST CONDITIONS REPORT WORK SHEET

PEST (COMMON NAME): Fir-Fern Rust

(SPECIFIC NAME): *Pucciniastrum epilobii* Otth. (unconfirmed)

HOST: Balsam Fir

PRESENT CONDITION: High levels of infestation in many Northern locations

AREA (TOTAL ACRES): Unknown

LOCATION: North Central Piscataquis County

SEVERITY (INCLUDE ACRES OF MODERATE AND HEAVY DEFOLIATION OR INFECTION; DEFINE CLASSES): ≈ 20 ha in 4r11 WELS of natural regeneration received moderate to heavy defoliation. Up to 80% needle drop.

LOSSES (INCLUDE AREAS OF TREE MORTALITY; ALSO VOLUME AND/OR $ ESTIMATED): None

TREND: 1986 was more severe than 1985

PAST TO PRESENT: Increasing

FUTURE: As spores are susceptible to desiccation in the Spring, the level of infection is dependent upon climatic conditions at that time.

CONTROL PROJECTS (METHOD, MATERIAL, ACRES, COST, RESULTS): None
Some individuals may have conducted control projects in Christmas tree plantations.

COMMENTS: Situation of heavy defoliation in 4r11 was unusual. In the past this has been most commonly an aesthetic pest of Christmas trees.

MAINE
1986 PEST CONDITIONS REPORT WORK SHEET

PEST (COMMON NAME): Western Gall Rust

(SPECIFIC NAME): *Endocronartium harknessii*

HOST: Scots Pine

PRESENT CONDITION:

AREA (TOTAL ACRES): 17 (in 1986)

LOCATION: Old Town, Greenbush, Farmington

SEVERITY (INCLUDE ACRES OF MODERATE AND HEAVY DEFOLIATION OR INFECTION; DEFINE CLASSES): Light-Heavy

Light - av. less than 1 gall/branch
Moderate - av. 1 gall/branch
Heavy - av. multiple galls/branch

LOSSES (INCLUDE AREAS OF TREE MORTALITY; ALSO VOLUME AND/OR $ ESTIMATED): Loss in Christmas trees at $15/tree* (cut-your-own) or $20/tree plus, wholesale*

*sheared and full, 8' up

TREND:

PAST TO PRESENT: Widespread and present in an estimated 25% of Scots pine plantations.

FUTURE: Approximately the same level of infection unless infected trees destroyed.

CONTROL PROJECTS (METHOD, MATERIAL, ACRES, COST, RESULTS): Rogueing well in advance of spore release.

COMMENTS: Spores were being actively released on May 26, 1986. Trees exhibited a wide range in susceptibility.

MAINE

1986 PEST CONDITIONS REPORT WORK SHEET

PEST (COMMON NAME): Caliciopsis Canker/Septobasidium-Matsucoccus Complex

(SPECIFIC NAME): *Caliciopsis pinea/Septobasidium pinicola-Matsucoccus macrocicatrices*

HOST: E. White Pine

PRESENT CONDITION:

AREA (TOTAL ACRES): 500 (estimated)

LOCATION: Baldwin (Sand Pond area) and Casco (Edes Falls Rd., Jct. with Otisfield and Naples)

SEVERITY (INCLUDE ACRES OF MODERATE AND HEAVY DEFOLIATION OR INFECTION; DEFINE CLASSES): Direct cause of mortality/decline not demonstrated, since pinewood nematode and Armillaria root rot may also be involved. Twig flagging over entire crown preceeds browning, mortality.

LOSSES (INCLUDE AREAS OF TREE MORTALITY; ALSO VOLUME AND/OR $ ESTIMATED): Loss of merchantible trees minimized due to salvage potential (this is already being done in Casco). If not salvaged, an estimated 30,000 bd. ft. would be lost.

TREND:

PAST TO PRESENT: Mid-crown pitching (one of the early symptoms) has been observed in several other locations in the past. Two fairly large areas were identified this year.

FUTURE: The condition appears to be increasing, but a dramatic increase in incidence is not anticipated. More accurate diagnoses may pinpoint other causes of mortality; e.g., pinewood nematode.

CONTROL PROJECTS (METHOD, MATERIAL, ACRES, COST, RESULTS): Harvest of trees with heavy mid-crown pitching (mostly trees with a low crown ratio)

COMMENTS: Many more trees have to be felled, examined for Caliciopsis/Septobasidium and sampled for pinewood nematode before the true cause for decline/mortality can be ascertained.

MAINE
1986 PEST CONDITIONS REPORT WORK SHEET

PEST (COMMON NAME): "Red" Fir Syndrome (Stilwell's in Canada)

(SPECIFIC NAME): Armillaria root rot plays a significant role in the manifestation of this problem.

HOST: Balsam Fir

PRESENT CONDITION:

AREA (TOTAL ACRES):

LOCATION: Throughout the spruce-fir type

SEVERITY (INCLUDE ACRES OF MODERATE AND HEAVY DEFOLIATION OR INFECTION; DEFINE CLASSES): This problem causes spotty mortality of balsam fir in stands which are or have been stressed by other factors such as off site, excess soil moisture and previous spruce budworm defoliation

LOSSES (INCLUDE AREAS OF TREE MORTALITY; ALSO VOLUME AND/OR $ ESTIMATED): Affected trees all die but these losses are usually a low percentage of the stand and occur over several years.

TREND:

PAST TO PRESENT: 1986 seemed to be ideal for this condition to manifest itself

FUTURE: The problem is expected to continue to appear yearly until susceptible trees have been harvested or die.

CONTROL PROJECTS (METHOD, MATERIAL, ACRES, COST, RESULTS): None feasible short of harvest

COMMENTS:

MAINE
1986 PEST CONDITIONS REPORT WORK SHEET

PEST (COMMON NAME): Eastern Dwarf Mistletoe

(SPECIFIC NAME): *Arceuthobium pusillum*

HOST: White and red spruce

PRESENT CONDITION:

AREA (TOTAL ACRES): 1,000 (estimated)

LOCATION: Monhegan Island, McGee and Barter Islands (Port Clyde), and Marsh Island (Round Pond). Also Liniken Neck (E. Boothbay)

SEVERITY (INCLUDE ACRES OF MODERATE AND HEAVY DEFOLIATION OR INFECTION; DEFINE CLASSES): Moderate to heavy infection on all sites listed.
Moderate - 1/8-1/4 of crown affected (broomed)
Heavy - more than 1/4 of crown affected

LOSSES (INCLUDE AREAS OF TREE MORTALITY; ALSO VOLUME AND/OR $ ESTIMATED): Losses heavy on Monhegan Island, and is causing a dangerous fire hazard situation. In other locations, tree loss minimal so far. The greatest loss is in infected reproduction (trees will not make it to maturity). Seashore camp values will decrease with substantial mature tree mortality.

TREND:

PAST TO PRESENT: In the past, severe loss only in the New Harbor-Pemaquid region. Large areas are now heavily broomed along the coast.

FUTURE: Reproduction particularly of white spruce will be eliminated and mature trees now heavily broomed will be killed; e.g., Liniken Neck, as they have on Monhegan Island and at New Harbor.

CONTROL PROJECTS (METHOD, MATERIAL, ACRES, COST, RESULTS): Sanitation pruning of young reproduction coincident with removal of infected, overstory trees.

COMMENTS: White spruce much more severely broomed than is red. Red still can be moderately broomed; e.g., as on Liniken Neck.

Seeds projected freely when brooms disturbed in E. Boothbay (10/8/86).

MAINE
1986 PEST CONDITIONS REPORT WORK SHEET

PEST (COMMON NAME): Sirococcus Shoot Blight

(SPECIFIC NAME): *Sirococcus strobilinus*

HOST: Red Pine

PRESENT CONDITION:

AREA (TOTAL ACRES): 600 (estimated)

LOCATION: T19 MD, Gouldsboro, Eustis, Jim Pond, Aurora

SEVERITY (INCLUDE ACRES OF MODERATE AND HEAVY DEFOLIATION OR INFECTION; DEFINE CLASSES): From light to severe, depending on location, tree height class.
Light = occasional flagging 1-5% of twigs
Moderate = 6-25% of twigs
Heavy = 26-90% and mortality
Severe = greater than 90% and mortality

LOSSES (INCLUDE AREAS OF TREE MORTALITY; ALSO VOLUME AND/OR $ ESTIMATED): Affected mature trees can be salvaged so loss minimized; however, potential for piling stock lost. Most important loss is of seedlings (future crop)

TREND:

PAST TO PRESENT: Very low incidence (or reports) up to about 15 years ago, when it started to become noticeable. Seedling and mature tree mortality occurring at Jim Pond/ Eustis and Gouldsboro, respectively.

FUTURE: Expect increased incidence and severity.

CONTROL PROJECTS (METHOD, MATERIAL, ACRES, COST, RESULTS):
Harvest of infected mature trees which overtop significant reproduction or where it is limiting establishment of reproduction. Prune out infected shoots in reproduction/pole-sized trees.

COMMENTS: The Gouldsboro site was the first observed where mature trees were killed by this organism.

MAINE
1986 PEST CONDITIONS REPORT WORK SHEET

PEST (COMMON NAME): Needle Rust (hard pine)

(SPECIFIC NAME): Coleosporium asterum

HOST: Jack Pine

PRESENT CONDITION:

AREA (TOTAL ACRES): 50

LOCATION: T19 MD

SEVERITY (INCLUDE ACRES OF MODERATE AND HEAVY DEFOLIATION OR INFECTION; DEFINE CLASSES): Light to moderate;
Light = Av. up to 2 pustules/needle;
Mod. = Av. 3-5/needle
Heavy = Av. more than 5

LOSSES (INCLUDE AREAS OF TREE MORTALITY; ALSO VOLUME AND/OR $ ESTIMATED): No losses observed

TREND:

PAST TO PRESENT: Omnipresent but heavy incidence fluctuates widely year-to-year. 1986 was a good year for Rusts in general.

FUTURE: Expect to see it crop up here and there, but shading out of alternate host species gradually diminishes incidence at a given site.

CONTROL PROJECTS (METHOD, MATERIAL, ACRES, COST, RESULTS):
Mowing during early plantation establishment to minimize inoculum potential.

COMMENTS: This pest generates concern of landowner and temporarily slows growth; however, it has never resulted in tree mortality in Maine, to my knowledge.

MAINE
1986 PEST CONDITIONS REPORT WORK SHEET

PEST (COMMON NAME): European Larch Canker

(SPECIFIC NAME): *Lachnellula willkommii*

HOST: Tamarack

PRESENT CONDITION:

AREA (TOTAL ACRES): 6,480 (approximate)

LOCATION: Washington, Hancock, Lincoln, Knox, Waldo Counties

SEVERITY (INCLUDE ACRES OF MODERATE AND HEAVY DEFOLIATION OR INFECTION; DEFINE CLASSES): At the two epicenters (Cutler/Jonesboro and Friendship) infection is heavy (stem cankers and more than one canker per branch). Infection light to moderate elsewhere (occasional cankers on branches and generally no stem cankers).

LOSSES (INCLUDE AREAS OF TREE MORTALITY; ALSO VOLUME AND/OR $ ESTIMATED): No mature tree loss so far observed. Only sapling-pole sized tree mortality. There is another loss involved. That is loss of stumpage sales. Scott will not allow suppliers to ship from uninspected sites within the quarantine boundary. I.P. may follow suit.

TREND:

PAST TO PRESENT: The disease was introduced sometime around 1969 into the area of the two current epicenters. In 17 years it has spread to the currently infested area (mostly confined to the coast).

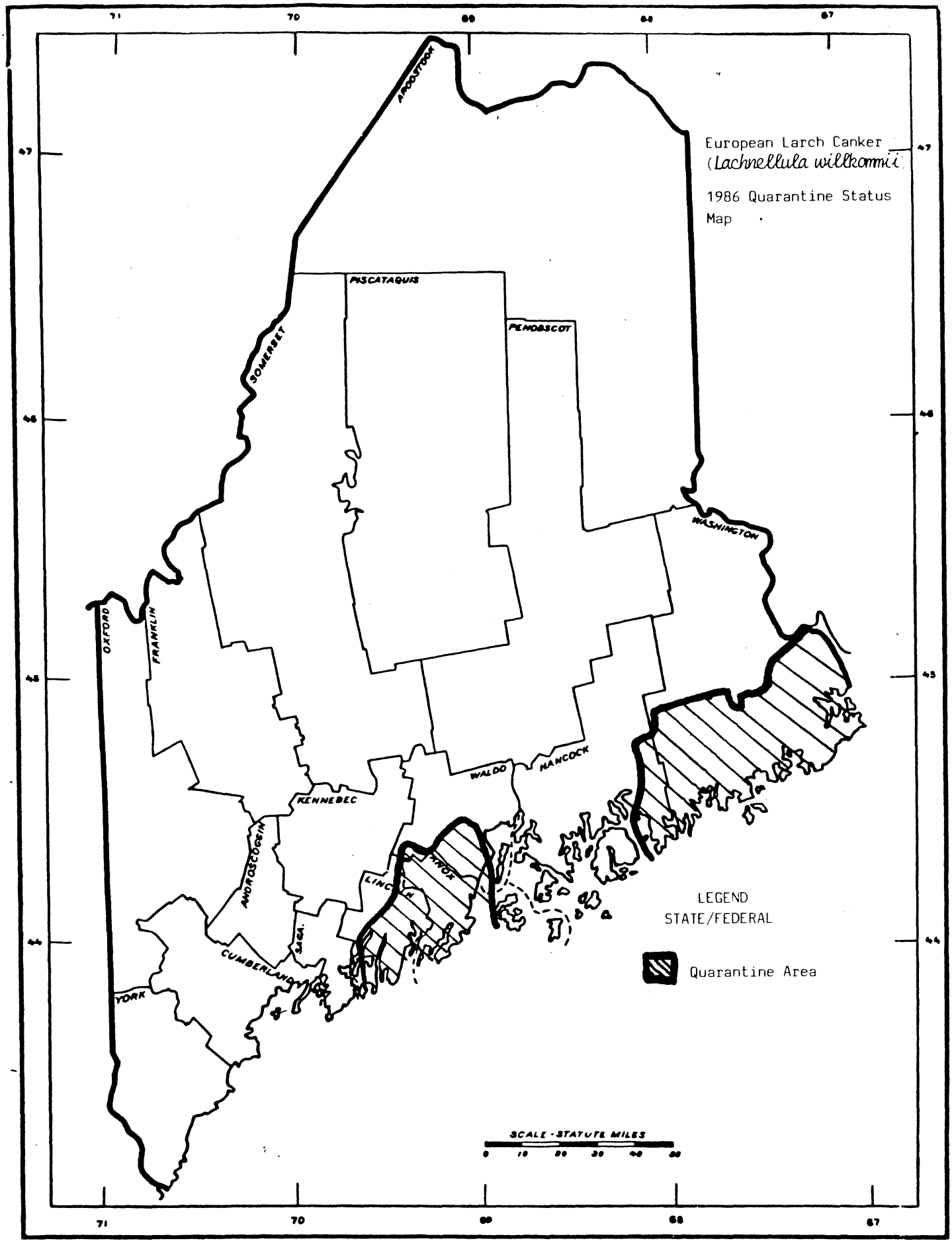
FUTURE: A gradual spread along the coast westward into the Bar Harbor area, and a spread to the East from Camden. Sapling and suppressed pole-sized trees will be subjected to increased cankering and mortality. Trunk cankers on larger trees will not kill but will substantially degrade affected trees.

CONTROL PROJECTS (METHOD, MATERIAL, ACRES, COST, RESULTS): State and Federal quarantines in effect and are being enforced. Compliance agreements allow direct movement of tamarack from within the quarantined area to mill sites outside.

COMMENTS: Old (3 yrs. old or older) bark is being allowed to be shipped out of the mill site for mulch. New bark can only be moved from the mill site directly to a hog fuel-utilizing power plant elsewhere within the state, and cannot be diverted for use as landscape mulch.

No new infected townships were located in the 1986 August summer survey. The quarantine boundary thus remains the same as it existed in December, 1985.

MAINE


European Larch Canker
(Lachnellula willkommii)
1986 Quarantine Status
Map
AROOSTOOK
PISCATAQUIS
PENOBSCOT
SOMERSET
WASHINGTON
OXFORD
FRANKLIN
KENNEBEC
WALDO
HANCOCK
ANDROSCOGGIN
LINCOLN
KNOX
CUMBERLAND
YORK
SAG.
LEGEND
STATE/FEDERAL
Quarantine Area
SCALE - STATUTE MILES
0 10 20 30 40 50
71
70
69
68
67
47
46
45
44

MAINE
1986 PEST CONDITIONS REPORT WORK SHEET

PEST (COMMON NAME): Naemacyclus Needlecast

(SPECIFIC NAME): *Cyclaneusma minus*

HOST: Scots Pine

PRESENT CONDITION:

AREA (TOTAL ACRES): 50 (estimated)

LOCATION: Farmington, Lincolnville Center, Searsmont

SEVERITY (INCLUDE ACRES OF MODERATE AND HEAVY DEFOLIATION OR INFECTION; DEFINE CLASSES): Moderate - heavy
Moderate - 2 yrs. needles affected
Heavy - more than 2 yrs. needles affected

LOSSES (INCLUDE AREAS OF TREE MORTALITY; ALSO VOLUME AND/OR $ ESTIMATED): A Christmas tree problem in all towns listed. If nothing done, about 40,000 trees could be affected. This could amount to $600,000 (@ $15/tree).

TREND:

PAST TO PRESENT: Not diagnosed in Maine prior to 1985. Two large, one small plantation affected in 1986; the small one lightly, the large ones heavily.

FUTURE: Nursery stock suspect. Preventive spraying at nursery sites should control. Without such preventive sprays, incidence will increase. So will intensity in unsprayed plantations.

CONTROL PROJECTS (METHOD, MATERIAL, ACRES, COST, RESULTS): Chlorothalonil being recommended

COMMENTS: Again, what is the infective distance of spores? If we knew more of this potential for many of our disease organisms, we could tell, in many cases (possibly) whether the trees became infected by long-range spores, or if there is a strong possibility of infected seedling stock. When 3-4' trees show 1983-1985 needles infected uniformly throughout a large plantation, I suspect infected nursery stock.

MAINE
1986 PEST CONDITIONS REPORT

Minor disease pests or those causing minor impact areawise in 1986 were as follows:

BIOTIC DISEASES

Lophodermium Needlecast (*Lophodermium pinastri*) - Trace to light on Scots pine in Eustis, Searsmont and Greenbush.

Rhizosphaera Needlecast (*Rhizosphaera kalkhoffii*) - Light on white spruce in Clinton.

Botrytis Blight (*Botrytis cinerea*) - A greenhouse problem of containerized hemlock, balsam, Fraser, and Concolor fir.

Poplar Fruit Blight (*Taphrina johansonii*) - Approximately 50% of trembling aspen capsules aborted by this organism in Augusta.

Phomopsis Gall (*Phomopsis* sp.) - Galls up to 6" diameter on red oak were observed on many trees in a localized area in Fayette. Light mortality resulted. A single affected tree was observed in New Gloucester.

Oak Leaf Blister (*Taphrina caerulescens*) - A moderate infection displayed developing blisters on June 6 in Fayette.

Dutch Elm Disease (*Ceratocystis ulmi*) - Due to a very wet season, symptom expression was not very obvious until about June 24 in Augusta. This disease has virtually exploded in the City of Bangor following abandonment of a sanitation program in recent years. Few healthy trees now remain.

Spruce Cone Rust (*Chrysomyxa pyrolae*) - Light to moderate infection was reported on white spruce cones in the Town of Glenwood. Rust spores were easily dislodged on July 2.

Spruce Needle Blight (*Lirula macrospora*) - A heavy infection on lower branches of Black Hills spruce was observed in a small pole-sized stand in Orland.

Spruce Needle Rust (*Chrysomyxa* sp.) - Approximately 10% of white spruce needles were infected in Glenwood. Spores were easily dislodged on July 2.

Gymnosporangium Rust (*Gymnosporangium* sp.) - Amelanchier fruit were heavily infected on Monhegan Island and ready to release aeciospores on July 28.

Ash Leaf Rust (*Puccinia sparganioides*) - Areas which had suffered several, consecutive years of heavy infestations of combined ash leaf rust and ash anthracnose, especially in the Cumberland Foreside and Yarmouth areas, were down to light infestations this year. An exception was the Arrowsic area, where heavy rust infection persisted, with localized tree mortality continuing to occur.

Fertilizer Injury - Black Hills spruce 3' high being grown for Christmas trees in Nobleboro were injured and occasionally killed by placement of fertilizer too close to the stem.

Winter Drying of Scots Pine - Long-needled varieties being grown for Christmas trees were lightly to moderately affected in Lincolnville Center and Greenbush.

Spruce Tumor - Tumors or burls up to 10" or more in diameter were common place on white spruce on Monhegan Island. Tumors were also observed on occasional white spruce on Linekin Neck, East Boothbay

MAINE
1986 PEST CONDITIONS REPORT WORK SHEET

PEST (COMMON NAME): White Pine Blister Rust

(SPECIFIC NAME): *Cronartium ribicola*

HOST: Eastern White Pine

PRESENT CONDITION: 98.4% of control area on maintenance

AREA (TOTAL ACRES): 1,862,119 (control area)

LOCATION: Central & southwestern, southern portion of state

SEVERITY (INCLUDE ACRES OF MODERATE AND HEAVY DEFOLIATION OR INFECTION; DEFINE CLASSES): Light (less than 1%/yr. of new infection) in acreage scouted within the past 10 years. Or in greenlined acreage.* Heavy (4%/yr. of new infection) in areas outside the control area.

*greenlined acreage = 1,150,500 acres

LOSSES (INCLUDE AREAS OF TREE MORTALITY; ALSO VOLUME AND/OR $ ESTIMATED): An undetermined volume outside the control area, plus old infection within the control area that occurred prior to eradication of ribes.

TREND:

PAST TO PRESENT: In early 1920's 40% or more mortality not uncommon. Excellent control within the control area at present. High losses outside the present control area.

FUTURE:

CONTROL PROJECTS (METHOD, MATERIAL, ACRES, COST, RESULTS): Incidental control by scouts treating isolated ribes bushes with 4-6 gal/A of Tordon RTU or 101-R. Control projects* accomplished by the municipality or landowner. Results excellent. (*Ribes concentrations)

COMMENTS: White pine weevil control or closer spacing of plantation trees is essential on weevil-susceptible sites in order for trees to be of commercial quality.

We scouted 71,152 acres this year. The difference between control acreage and greenlined acreage is 711,606 acres, or 71,161 acres to be scheduled each year; however, a backlog of approx. 140,000 acres not done as scheduled, places acreage that should be scheduled each year at 85,161 acres, for a shortfall of 14,000 acres per year not worked (thus not protected). Low pruning is economically feasible in extremely limited situations and does not protect the 1-5 yr. age class.

1986 PEST CONDITIONS REPORT WORK SHEET

PEST (COMMON NAME): Annosus Root Rot

(SPECIFIC NAME): *Heterobasidion annosum*

HOST: Red and White Pines, Norway Spruce

PRESENT CONDITION: No new infestations detected or reported in 1986.

AREA (TOTAL ACRES): Approximately 25

LOCATION: All counties except Oxford, Kennebec, Sagadahoc, Knox, Hancock, Washington and Aroostook Counties.

SEVERITY (INCLUDE ACRES OF MODERATE AND HEAVY DEFOLIATION OR INFECTION; DEFINE CLASSES): Heavy infection in Parsonsfield, Auburn, and Belfast. Light to moderate elsewhere.
Light - a single "hole"; less than 10 trees symptomatic
Moderate - several "holes"; less than 1 acre symptomatic
Heavy - several "holes"; more than 1 acre symptomatic

LOSSES (INCLUDE AREAS OF TREE MORTALITY; ALSO VOLUME AND/OR $ ESTIMATES): Approximately 20,000 bd.ft.; approximately $15,000 loss if not salvaged. Extra loss is growth loss, incomplete stocking, and need to practice borax stump treatment.

TREND:

PAST TO PRESENT: Many early-established plantations were just reaching thinning age 30 years ago. Annosus Root Rot was light and uncommon, except for Leavitt plantations in Parsonsfield (this was one of earliest plantations). As thinnings increase, so has Annosus Root Rot. Twenty-three townships now contain infected stands.

FUTURE: As thinnings increase and management becomes more intensive, incidence will increase without stump treatment control.

CONTROL PROJECTS (METHOD, MATERIAL, ACRES, COST, RESULTS): No specific control projects. Stump treatment at time of thinning is being recommended. (Borax is the material).

COMMENTS: Without recent specific impact information, foresters are still hesitant to push this on operators (because of extra time and extra cost). If consulting foresters give the operator an incentive to practice stump treatment in the form of reduced stumpage prices, this cuts into the forester's income, which is generally based on a percentage of stumpage value.

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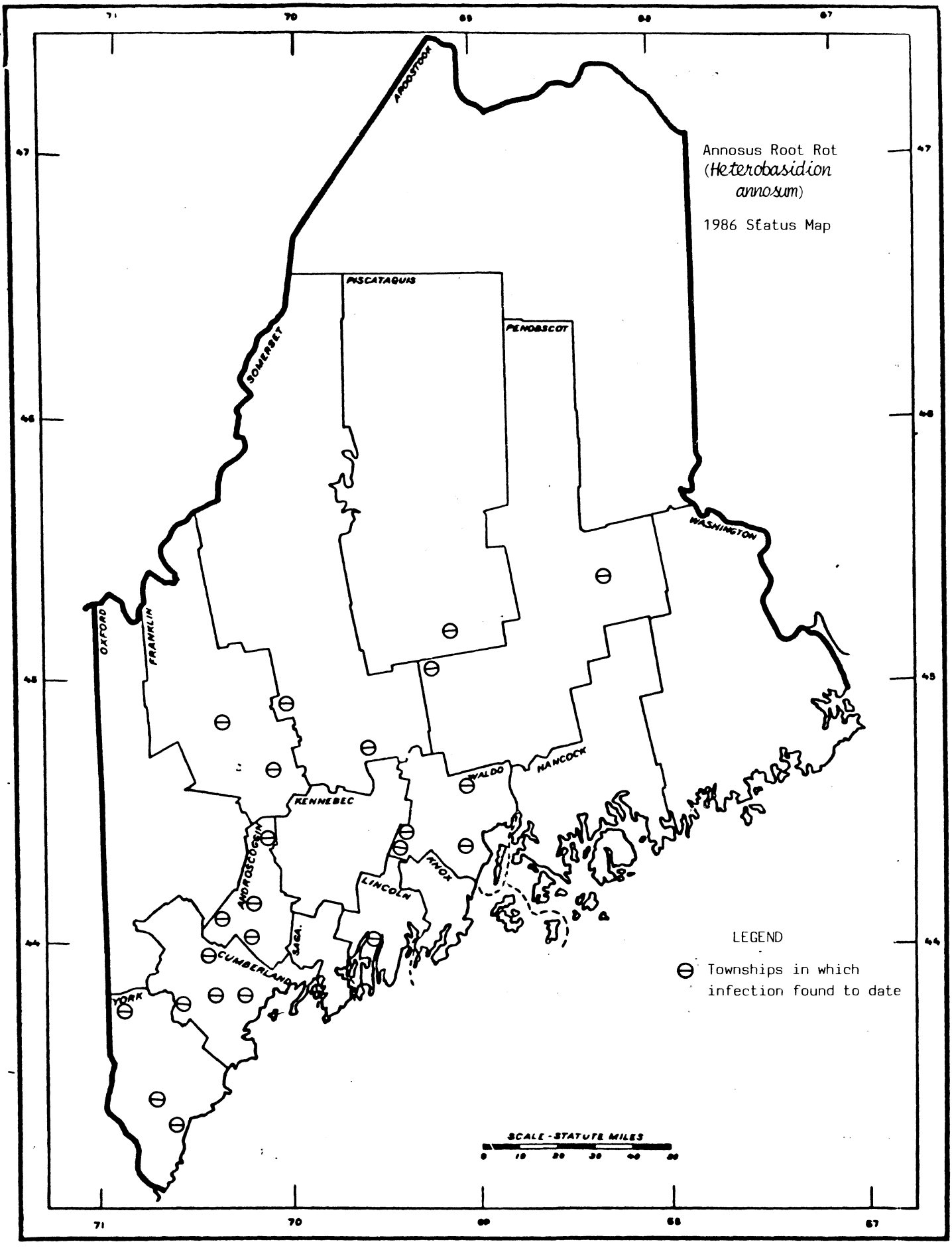
Annosus Root Rot
(Heterobasidion annosum)
1986 Status Map
AROOSTOOK
PISCATAQUIS
PENOBSCOT
SOMERSET
WASHINGTON
OXFORD
FRANKLIN
KENNEBEC
WALDO
HANCOCK
ANDROSCOGGIN
KNOX
LINCOLN
SAG.
CUMBERLAND
YORK
LEGEND
Townships in which infection found to date
SCALE - STATUTE MILES
0 10 20 30 40 50
71
70
69
68
67
47
46
45
44

JOSEPH E. BRENNAN
GOVERNOR

STATE OF MAINE
DEPARTMENT OF CONSERVATION
STATE HOUSE STATION 22
AUGUSTA, MAINE 04333
Entomology Laboratory
50 Hospital Street
Augusta, Maine 04330
Tel. 289-2431

RICHARD B. ANDERSON
COMMISSIONER

AUG 7 RECD

Forest & Shade Tree - Insect & Disease Conditions for Maine
August 4, 1986

Anyone doing a rain dance can now stop or send the fruits of their labor south. Some of this past week's rainfall has been heavy and the continued drizzle has certainly dampened many of the outdoor activities at this busy part of the summer season. Soil moisture levels are now adequate to revitalize many dry areas of the State.

Newsletter Frequency

In case you are still looking for last week's newsletter we should point out that none was issued. Due to the lower number of problems needing discussion we have begun our biweekly phase through September. If you have comments on this decision, please feel free to let us know.

Specialty Assignments

For those of you who are not already aware of it, there have been some fairly recent specialty assignments in the Division of Entomology. This was felt necessary to insure that individuals addressing these areas of interest could devote significant time to various complexities associated with them. The specialty assignments are as follows:

Christmas Trees	Dr. Clark A. Granger	Maine Department of Conservation State House Station #22, Augusta, ME 04333 Phone (207) 289-2791
Regeneration (Primarily Conifers)	Richard Bradbury	Entomology Laboratory, 50 Hospital Street, Augusta, ME 04330 Phone (207) 289-2431

Anyone who has problems associated with either area of specialty or wishes advice on such should contact these individuals directly.

Insects

* **Alder Flea Beetle (*Altica ambiens alni*)** - Larvae of this species are now drawing attention as they brown up alder over large areas of lowlands throughout the State. The numerous, small (1/4" long) dark blue-black larvae with light undersides have now nearly reached maturity and the skeletonizing should soon be complete. Pupation occurs in the soil and the shiny metallic blue beetles (1/8" long) will be in evidence in August and throughout the fall. Hibernation occurs in the adult stage and adults frequently amass in numbers in the fall and spring in and around homes. The beetles are more nuisance than destructive (unless you are concerned about alders).

* **Arborvitae Leaf Miners (several species)** - Egg laying should now be completed and most eggs should hatch over the next week or so. Ornamental cedars can be protected from these miners by spraying about the first or second week of August, when the mines just become visible indicating infested foliage from tiny mining larvae. Dimethoate (Cygon) or malathion applied at this time should be effective. A moderate amount of damage can be expected when 3 to 6 mines per 3-inch of twig terminals are found. Higher counts can cause heavy browning. Populations are very high this season especially in southeastern Maine and spotty throughout much of the rest of the State.

Bark Lice or Psocids - These interesting "little cattle" occur in "herds" on the bark of various hardwood and softwood trees in central and southern Maine at this time of year. The species most commonly encountered is *Cerastipsocus venosus*. They are small (3/16" long), grey insects with white cross banding and the adults have dark smoky grey wings with a triangular white spot on each forewing. The species feed on lichens and fungi on the tree bark and do not feed on the tree itself so they do no harm. They disappear soon after the winged adults appear (mid August).

* **Birch Casebearer (*Coleophora serratella*)** - Defoliation caused by this species has peaked for the season. Moderate (25-50%) defoliation was noted in Trenton and Whiting. Similar damage was also noted in Argyle and Edinburg where the defoliation was amplified by the presence of gypsy moth.

* **Birch Leaf Miner (*Fenusa pusilla* and *Profenusa thomsoni*)** - Severe browning of birch is very evident in many areas from the activity of the larvae of these species. Much of the damage is now done and control measures applied at this time would be ineffective. Most trees will survive, however. Where a serious problem exists, and control is desired, you should prepare for timely treatment in 1987.

* **Fall Webworm (*Hyphantria cunea*)** - The developing tents of this species are now in evidence in southern Maine enveloping branch tips and browned leaves. They are particularly noticeable on alder, beech, elm, and apple. Within these tents the yellowish to greyish, prettily marked and fuzzy caterpillars are developing rapidly. When populations are heavy, the tents may eventually encompass entire small trees. Populations are especially heavy in Kennebec County. Control of this pest can be achieved by clipping and destroying small tents early or spraying with a registered pesticide such as methoxychlor, diazinon, or Bt.

Another "fuzzy" caterpillar which seems to be abundant this year in southern Maine is the **Hickory Tussock (*Lophocampa caryae*)**. This species feeds much the same as the fall webworm in its early stages but without the tent. The fuzzy larvae of this species are strikingly white with black tufts. As they grow, they disperse and feed singly. This species seems to prefer walnut, butternut, basswood, hickory and oak.

* **Gypsy Moth (*Lymantria dispar*)** - In most of the infested areas, feeding is now finished with the insects at or approaching pupation. Some moths have been noted.

To date the aerial defoliation survey has detected no significant defoliation by gypsy moth in southern Maine. The majority of the hardwood defoliation has been noted in the Penobscot Valley from Old Town to Lincoln. Although gypsy moth is definitely the causal agent in many of the areas, others will have to be checked to determine the cause.

Scattered new areas of defoliation have been noted as far east as Codyville. If all these spots are caused by gypsy moth, they will represent a significant expansion of the current infestation to the east.

Larch Sawfly (*Pristiphora erichsonii*) - So far our only confirmed report of this species was from a single tree in King and Bartlett township.

Oak Twig Pruner (*Elaphidionoides villosus*) feeding is now becoming evident as mined twigs and small branches (up to 1 1/2" in diameter) break at the point of girdling and either hang as flags or drop to the ground. The larvae should be in the mined out center portion of these twigs and by collecting and destroying them you can reduce the populations for another year. Some trees seem to be hit every year and even though pruned branches may litter the ground beneath these trees, no permanent injury seems to occur. Damage from this species seems to be more pronounced this season than last and some trees seem to be surrounded by a brush pile of twigs. The more consistent winds of this season seem to have caused a higher percentage of the branches to drop early.

* **Spruce Budworm (*Choristoneura fumiferana*)** - Moths of this species have now laid their eggs and have nearly all disappeared. Most of these eggs should hatch soon and the tiny larvae begin wandering around prior to entering winter quarters. Moth trap catches this season seem to be much lower than last year. Little moth activity was noted in the field except in coastal Hancock County.

All the defoliation data from this year's experimental Bt project have been collected and summarized. Spray deposit data is being processed by Dr. John Dimond. Data analysis is underway and a preliminary report should be available within 2 weeks. Defoliation in all treatment blocks appears to be considerably less than in associated checks.

The annual aerial survey of the spruce-fir type for spruce budworm defoliation is nearly done. Although visible current damage was rare and spotty, isolated individuals and clumps of dead "red fir" (Stilwell's Syndrome) were commonly noted throughout the spruce-fir type. Previous investigation of such symptomatic trees have shown past stress and current shoestring root rot to be major contributing factors.

The annual predictive L-2 survey begins on August 18.

* **White Pine Weevil (*Pissodes strobi*)** - Don't forget corrective pruning. Those infested terminals show up well now.

* **Willow Flea Weevil (*Rhychaenus rufipes*)** - Mining and browning of willow foliage by larvae of this species is now evident and a new generation of beetles are beginning to appear. These small black bead-like hard shelled beetles may occur in large numbers on heavily infested trees where they may drop in on "cookouts" and loungers alike. These beetles overwinter. Control at this time is too late.

* **Yellow-headed Spruce Sawfly (*Pikonema alaskensis*)** - At this time of year we frequently receive inquiries as to the cause of bare branch tips on various ornamental spruce, especially blue and Norway. Many times we find that this is a result of sawfly larval feeding in June and early July. When the larvae are feeding, they often go unnoticed because as they grow and eat the foliage, the color of their bodies replaces the green of the foliage and masks their presence. Only after they drop in July does the damage become evident to many homeowners. Control at this time is too late. Watch for tiny clustered larvae on branch tips in June another year.

Insects to Watch for over the next month include: beech and oak leaftiers (the flat leaftiers - *Psilocorsis*); oak skeletonizer; fall webworm; bark lice; green striped mapleworm and many of the fuzzy tussock moth caterpillars.

Note: Insect damage appearing in August is frequently the result of activity earlier in the season. Each year we receive many calls to check symptomatic trees for which our recommendation is to watch early another year. Stressed or damaged trees become especially visible at this time of year as they turn off-color. This change contrasts strikingly to the green of healthy foliage and prompts concern. In many cases the damage is already done. Good tree management means being alert for potential problems before trees become symptomatic.

Diseases

Ash Leaf Rust (*Puccinia sparganioides*) - Although the epidemic situation of the past three years appears to be on the wane, there are still localized areas of heavy infection on ash. One such area is on the Holt Forest in Arrowsic where the number of separate aecial sites on a single leaf varied from 3 to 57. The highest number on a single leaflet was 17. Although dissemination of aeciospores has peaked and aecia are generally drying up, there are still many active aecia releasing spores. Ash anthracnose fruiting bodies commonly were observed within the necrotic areas surrounding expended aecial pustules, and caused additional necrosis outward from them. The combination of rust and anthracnose infection has initiated some premature leaf drop.

Tree mortality has been severe, and some large trees which withstood past rust epidemics have died along with many intermediate and suppressed trees. Shade tree specimens with dead tops but with active sprout growth frequently can be salvaged and a new crown will develop. In forested areas, dead trees as well as those with moderate to heavy dieback symptoms should be salvaged.

Naemacyclus Needlecast (*Cyclaneusma minus* = *Naemacyclus minor*) - Dr. Bill Livingston of the UMO Botany Department recently reported this disease from Scots pine near Skowhegan. It appears that this needlecast may be fairly widespread in spite of its relatively recent detection. Scots pine being grown for the Christmas tree trade should be checked for this disease.

Hail Damage - Heavy hail damage to various hardwoods recently occurred in the vicinity of the south end of Round Pond, south of Plymouth village.

Some browning has already resulted and is readily visible from the air. The advent of hot, dry weather in August should aggravate the browning symptom.

Sugar Maple Flagging - Isolated dead branches with brown leaves attached are now commonly observed since the advent of hot, dry weather. Three weakly parasitic fungi generally are associated with this flagging: *Steganosporium* (black, tar-like spots on the branch); *Nectria cinnabarina* (hemispherical, pink-coral-colored, pinhead-sized eruptions) and *Cystospora* (Numerous, tiny raised pustules with a white center). Prune out dead and flagging branches, and remove them from the area, since these fungi will continue to release spores and possibly cause new infections. Maintaining shade tree sugar maples in a vigorous condition will help to avoid this condition.

Spruce Burls - Burls on white spruce were observed on Monhegan Island in profusion, and varied in size from approximately 3" to 16" in diameter. Burls develop when a single cell proliferates in an abnormally rapid fashion compared with surrounding cells. The factor which triggers this abnormal process of cell division is not known.

Dwarf Mistletoe (*Arceuthobium pusillum*) - Severe infection of white spruce on Monhegan Island has caused extensive brooming and resultant mortality between the whitehead and Burnthead Trails in the central portion of the island. A serious fire hazard situation is now present, and continued brooming of sapling and pole-sized reproduction will perpetuate this condition. Capsules on the female plants are now approximately half of their mature size.

Dutch Elm Disease (*Ceratocystis ulmi*) - Many large trees which until this year escaped the initial wave of devestation, are now showing disease symptoms. If trees have more than 10% of the crown with wilting, yellowing and browning foliage, the tree is generally beyond help. Consult the June 26 issue of this publication for more specific recommendations.

Early Fall Coloration is starting to show up on stressed trees or in stressed situations. Red maple is one of the first to turn under these conditions and some trees are consistently early every year.

* Information available from the Entomology Laboratory, 50 Hospital Street, Augusta, ME 04330.

Compiled by Richard G. Dearborn and Douglas A. Stark

JOSEPH E. BRENNAN
GOVERNOR

STATE OF MAINE
DEPARTMENT OF CONSERVATION
STATE HOUSE STATION 22
AUGUSTA, MAINE 04333
Entomology Laboratory
50 Hospital Street
Augusta, Maine 04330
Tel. 289-2431

RICHARD B. ANDERSON
COMMISSIONER

Forest & Shade Tree - Disease Conditions for Maine
July 2, 1986

Our past weeks' weather can be characterized as basically windy with warm days and cool nights. Gardens are moving slowly but in central and northern Maine much of the corn will not be the traditional "knee high by the Fourth of July." In many areas it is all crops such as cucumbers can do to stay ahead of the "bugs."

Insects

* **Birch Leaf Miners (several species)** - Second generation mines of *Fenusa pusilla* and starting mines of *Profenusa thomsoni* should be evident now as small translucent spots in birch leaves where infestations exist. This would be the time to apply foliar treatments such as carbaryl or malathion. Several other leaf mining species attack birch but generally do not cause widespread damage. Timing for control of these other species using foliar applications would be similar (when small translucent mines first appear).

* **Fall Webworm (*Hyphantria cunea*)** - Larvae of this species should be starting to appear. The tiny greyish fuzzy caterpillars are gregarious and may feed (skeletonize) without a web for a short period of time. Skeletonized leaves have the consistency of light tan tissue paper. As they grow the larvae form their characteristic loose web that may eventually enclose entire branches or small trees. The host range is wide and includes many hardwoods. Although this insect is primarily a nuisance pest, when populations are heavy they can defoliate entire trees. There seems to have been increasing numbers of fall webworm in southern Maine over the past few years.

Greenstriped Mapleworm (*Dryocampa rubicunda*) - Larvae of this species should now be starting to feed on red maple in central and eastern Maine.

* **Larch Sawfly (*Pristiphora erichsonii*)** - Keep an eye open for those shepherds crooks in new growth caused by egg laying of the female of this species.

Rose Chafer (*Macrodactylus subspinosus*) - Adults of this species are still very active and frequently enter homes on laundry and floral arrangements. Populations are the heaviest in years at least in Kennebec County.

* **Saddled Prominent (*Heterocampa guttivitta*)** - Tiny larvae of this species should be evident soon. At first they feed as skeletonizers on the undersides of the leaves of sugar maple, beech, and birch. The translucent spots are readily visible when viewed from beneath. We would appreciate reports of this species with specimens for confirmation.

* **Spruce Budworm (*Choristoneura fumiferana*)** - Pupation is now becoming common statewide and moths have begun to emerge in eastern Maine. Now is the time to watch for moth flights which may occur over the next two weeks. These flights can bring an added boost to budworm numbers in areas of low population and areas where numbers have been reduced by treatment. When flights do occur, their numbers are often excessive and startling. Spruce budworm moths are small and mottled greyish-brown with a wingspan of 3/4 - 1". Flights frequently accompany storm fronts across the State. Fronts

JUL 7 RECD

moving from the south or west tend to be less of a threat than those coming down from the north or northwest. Fronts from the east or northeast would also be a problem but are less likely. Moths in these flights can come from miles distant so may move from Canada in to Maine. Such flights have been known to carry moths for several hundred miles and deposit large numbers of moths far at sea. Information on moth flights is an important part of spruce budworm surveys and we would appreciate receiving reports of suspected flight activity. Send reports along with specimens for species confirmation to Richard G. Dearborn, Entomology Laboratory, 50 Hospital Street, Augusta, Maine 04330.

* **Tent Caterpillars (*Malacosoma* spp.)** have now pupated and their elongate silken cocoons which are often dusted with a sulfur colored material can be seen on a wide variety or objects and in secluded sites where infestations occurred. The chocolate brown or tan "chunky" moths with a 2 1/4 - 1 1/2" wingspan are beginning to emerge in southern and central Maine and will soon appear in northern areas. Moths of the eastern tent (the true tentmaker of roadside and hedgerow cherry and apple) have two white bands across the forewings. Moths of the forest tent (the forest feeder on poplar which makes no tent) have different shaded brown bands but no white. These will lay eggs in glistening raised masses surrounding twigs of the host trees. These eggs will hatch next spring. Removal of these egg masses may help reduce the nuisance around the home.

* **White Pine Weevil (*Pissodes strobi*)** - Infested terminals are now very evident and any corrective pruning should be done soon.

Diseases

Fir Needle Rust (*Pucciniastrum epilobii* or *P. abieti-chamanerii*) - A report of heavy to severe damage to young balsam fir reproduction in T4 R11 southwest of Soubunge Mt. was checked out and the following observations made:

The alternate host of this orange-spored needle rust undoubtedly is fireweed, since wherever fireweed occurred, so did needle rust, to some degree. Of the other potential alternate hosts, blueberry and willow: little blueberry occurs in the immediate area, and no rust was noted in areas of abundant willow.

Early-breaking trees, as evidenced by late frost injury (drooping, browned shoots of the current growth) appeared to contain higher percentages of infected needles than late-breaking trees.

The number of needles per shoot varies, but averages in excess of 200. The severest infestation had around 50% of the needles infected; infection on individual shoots was as high as 58%. Although the most severely affected trees will not reach their maximum growth potential because of the rust, there is a good supply of less susceptible fir saplings present which will approach their maximum growth rate.

In other areas, balsam and concolor fir needle samples have been observed with both orange and white-colored rust spores. These spores infect the alternate host plants now, and in some cases, the spore dispersal stage has been completed. Since most stages of rust fungi have to develop on living tissue, mowing or otherwise killing these alternate host plants <u>now</u> will prevent development of the overwintering stage.

Ash Mortality - Although no detailed impact data have been collected as yet, a recent report mentions considerable mortality of ash in the Sheepscott River Valley. This area has had several previous years of heavy defoliation caused by ash leaf rust and ash anthracnose. In such areas do not be too hasty to remove trees with only scattered or tufted foliage. Ash leaf rust incidence is apparently down this year, giving these trees a chance to recover.

Have a safe and happy Fourth of July.

* Information available from the Entomology Laboratory, 50 Hospital Street, Augusta, ME 04330.

Compiled by Richard G. Dearborn and Douglas A. Stark